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DRAFT ENVIRONMENTAL ASSESSMENT

CHICAGO BRIDGE AND IRON COMPANY Marion County, Tennessee

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COOPERATING AGENCY:
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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

°F	Degree Fahrenheit
§	Section
AADT	Annual Average Daily Traffic
APE	Area of Potential Effects
BA	Biological Assessment
BMPs	Best Management Practices
BO	Biological Opinion
CBI	Chicago Bridge and Iron
CFR	Code of Federal Regulations
CWA	<i>Clean Water Act</i>
EA	Environmental Assessment
EO	Executive Order
FIRM	Flood Insurance Rate Map
FRP	Flood Risk Profile
HPA	Habitat Protection Area
I-24	Interstate 24
kV	Kilovolt
L	Left Bank
LOS	Level of Service
MOA	Memorandum of Agreement
msl	Mean Sea Level
NEPA	<i>National Environmental Policy Act</i>
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
PCBs	Polychlorinated Biphenyls
Plan	<i>Guntersville Reservoir Land Management Plan</i>
R	Right Bank
RHA	<i>Rivers and Harbors Act of 1899</i>
RFAI	Reservoir Fish Assemblage Index
SFI	Sport Fishing Index
SHPO	State Historic Preservation Officer
SMZs	Shoreline Management Zones
SR	State Route
SWA	Small Wild Area
TDEC	Tennessee Department of Environment and Conservation

TL	Transmission Line
TRM	Tennessee River Mile
TVA	Tennessee Valley Authority
TVARAM	TVA Rapid Assessment Method for Categorizing Wetlands, a Version of the Ohio Rapid Assessment Method Designed Specifically for the TVA Region
TWRA	Tennessee Wildlife Resources Agency
US	U.S. Highway
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VMP	Vegetation Management Plan

CHAPTER 1

1.0 PURPOSE OF AND NEED FOR ACTION

Chicago Bridge and Iron Company (CBI) proposes to develop approximately 1.1 acres of Tennessee Valley Authority (TVA) property and an adjoining 62 acres of private property at Tennessee River Mile (TRM) 423.8 left bank (L) on Guntersville Reservoir in Marion County, Tennessee, for industrial purposes. CBI plans to fabricate containment vessels for nuclear materials. The activities occurring on CBI and TVA property would be limited to fabrication and shipping only, and no nuclear material would be present on the site. In August 2008, CBI requested that TVA grant a 30-year term industrial easement on a 1.1-acre portion of TVA property for access to Guntersville Reservoir. CBI also requested that TVA and the U.S. Army Corps of Engineers (USACE) approve a launching ramp, crane platform, fill material, and three storm water outfalls (Appendix A).

1.1. The Decision

TVA is considering a request for a 30-year industrial easement on a 1.1-acre portion of TVA property on the Tennessee River in Marion County, Tennessee (Figures 1-1 and 1-2). CBI would utilize the easement area for the final stages of assembly and shipping of its product. In addition, TVA is considering a request by CBI for approval under Section 26a of the *TVA Act* for a launching ramp, a crane platform along the shoreline, three storm water outfalls, and approximately 24,145 cubic yards of fill material. The launching ramp and a portion of the crane platform would also be located on the TVA property. CBI would construct the fabrication plant, administrative buildings, parking and employee picnic areas, and walking trail on private property.

TVA has also received a request to relocate a portion of the Nickajack-Jasper 161-kilovolt (kV) Transmission Line (TL) Tap to Kimball Tap to Tennol that crosses the CBI property where construction of the fabrication plant would occur (Appendix B). In order to accommodate this request, CBI would purchase a portion of the neighboring property. The TL would be relocated to this newly purchased property and another portion of CBI property. CBI would convey to TVA a permanent easement for a 100-foot-wide right-of-way along the entire route of the TL relocation.

CBI would also need rail access to its property. The nearest rail line is located to the southeast of the CBI property and operated by CSX. A new rail line approximately 4,700 feet long would need to be constructed and would cross TVA and Nickajack Port property (Appendix B). TVA anticipates a land use request for the new rail line from CBI, CSX, Marion County Railroad Authority, or Nickajack Port Authority.

Section 10 of the *Rivers and Harbors Act of 1899* (RHA) prohibits the alteration or obstruction of any navigable waters of the United States unless authorized by the Secretary of the Army acting through the Chief of Engineers. Section 404 of the *Clean Water Act* (CWA) prohibits the discharge of dredged or fill material into waters of the United States unless authorized by the Department of the Army. The Tennessee River is considered both “waters” and “navigable waters” of the United States as defined by 33 Code of Federal Regulations (CFR) Parts 328 and 329, respectively. Therefore, since the proposal involves structures and fill within a navigable waterway, Section 10 and Section 404 permits would be required. Since Department of the Army permits would be required, USACE must decide whether to (1) issue the permits as proposed, (2) issue the permits with modification and/or conditions, or (3) deny the permits. USACE is a cooperating agency in the preparation of this environmental assessment (EA).

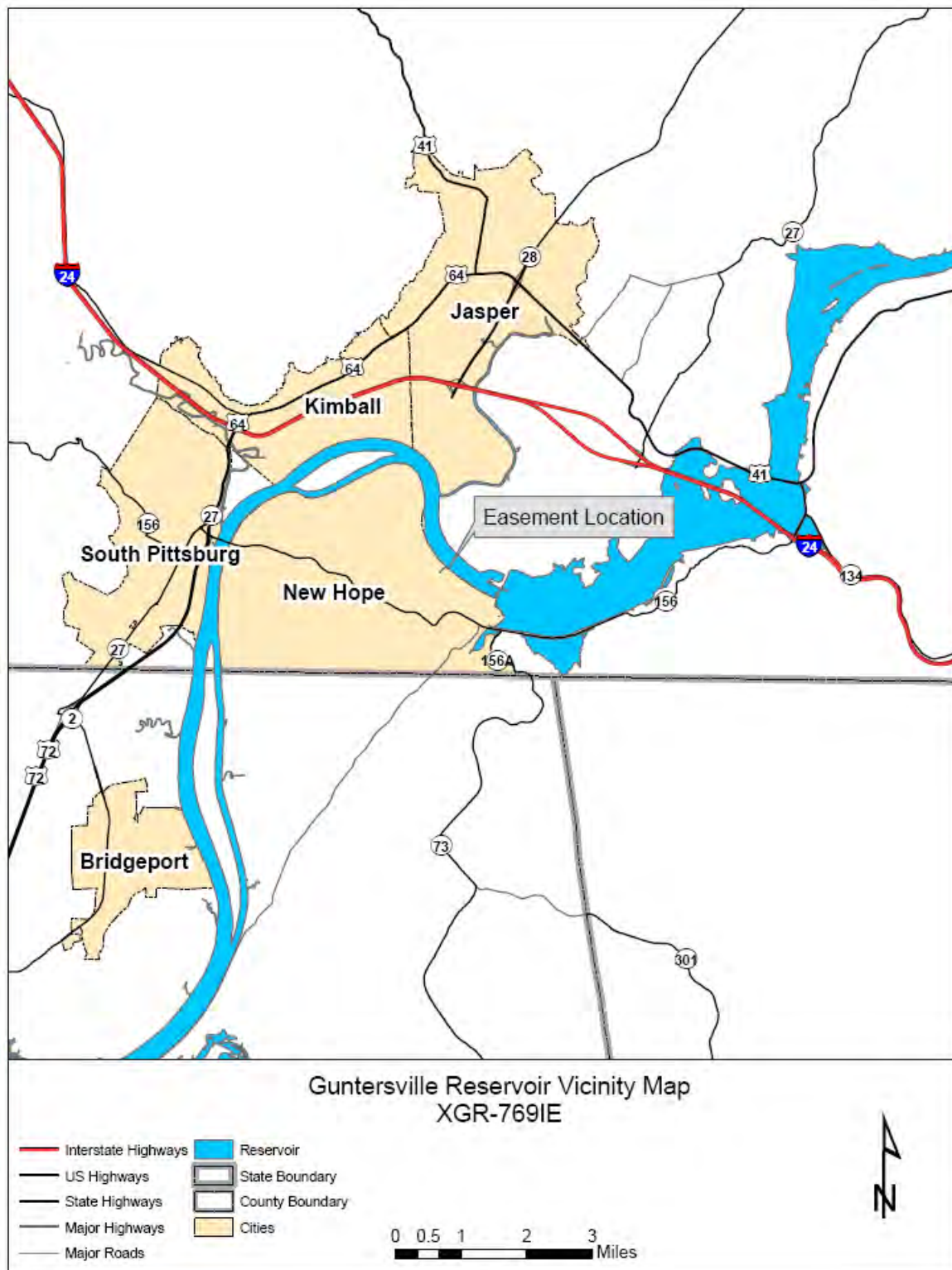


Figure 1-1. Project Vicinity Map

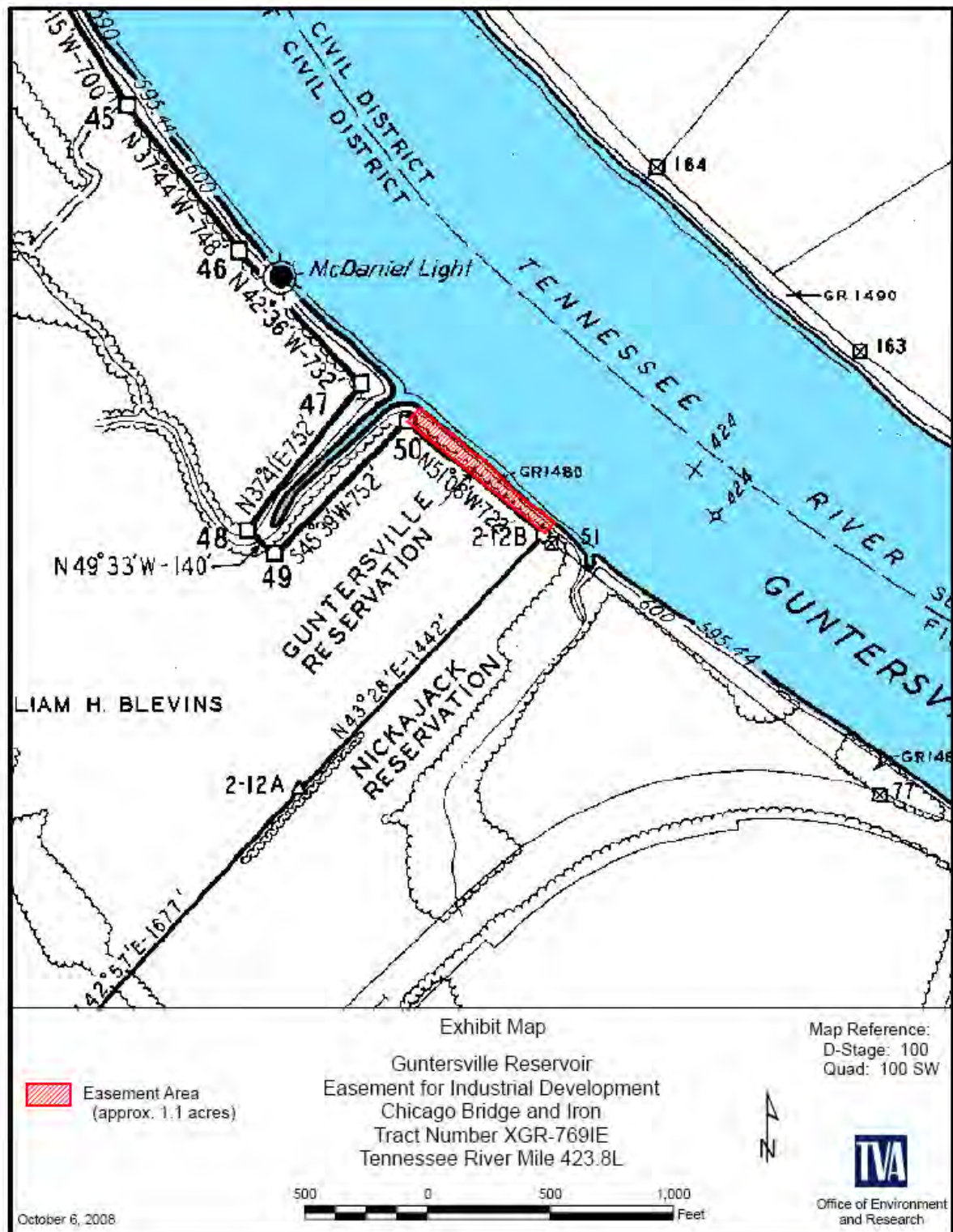


Figure 1-2. Proposed Easement Exhibit Map

1.2. Other Pertinent Environmental Reviews or Documentation

A series of *National Environmental Policy Act* (NEPA) documents and other pertinent documents have discussed the same resources considered in this EA. These documents are listed below.

Guntersville Reservoir Land Management Plan Final Environmental Impact Statement (TVA 2001)

In September 2001, the TVA Board of Directors approved the *Guntersville Reservoir Land Management Plan* (hereafter referred to as the Plan) to guide TVA resource management and property administration decisions on 40,236 acres of TVA land on Guntersville Reservoir. A multidisciplinary TVA team undertook a detailed planning process that resulted in the land use designations in the Plan. The Plan designated the 16.725-acre Tract XGR-172PT2 for industrial/commercial development (Figure 1-3). The proposed easement for CBI is located within this tract.

Chip Mill Terminals on the Tennessee River Final Environmental Impact Statement (TVA 1993)

In this 1993 environmental impact statement, TVA evaluated the environmental impacts of three proposed chip mills and associated barge terminals between Bridgeport, Alabama, and Nickajack Dam. TVA ultimately denied the land use requests and Section 26a approvals necessary for the construction of the chip mills, which were not built. The CBI site is immediately downstream of the location of one of the previously proposed chip mills.

Proposed Industrial Park and Barge Terminal Guntersville Reservoir Final Environmental Assessment (TVA 1982)

In May 1982, TVA issued a finding of no significant impact and a final EA for the sale and conveyance of certain landrights under TVA control in Marion County, Tennessee, and approval of plans for the construction and operation of a barge facility. The proposed facility, which is owned by the Nickajack Port Authority and consists of three mooring cells and back-lying land that would be developed into an industrial park, is located on the Guntersville Reservoir at TRM 423.8L, approximately 0.6 mile downstream of Nickajack Dam and immediately upstream from the proposed easement area for CBI.

1.3. Public Involvement

A joint public notice will be issued by TVA and USACE announcing a public comment period through December 22, 2008. Copies of the notice will be sent to adjacent property owners and placed on the USACE Web site, http://www.lrn.usace.army.mil/cof/proposed_activities.htm. A copy of this draft EA document is being made available to the agencies listed in Chapter 5. In addition, a copy of the draft EA is being made available on TVA's Web site, <http://www.tva.gov/environment/reports/index.htm>, for public review and comment. Public comments may be submitted to either TVA or USACE for consideration in development of the final EA. TVA and USACE will address any comments received on the public notice and this draft EA in a final EA and consider them in deciding whether to grant the requested easements, approvals, permits, and TL relocation.

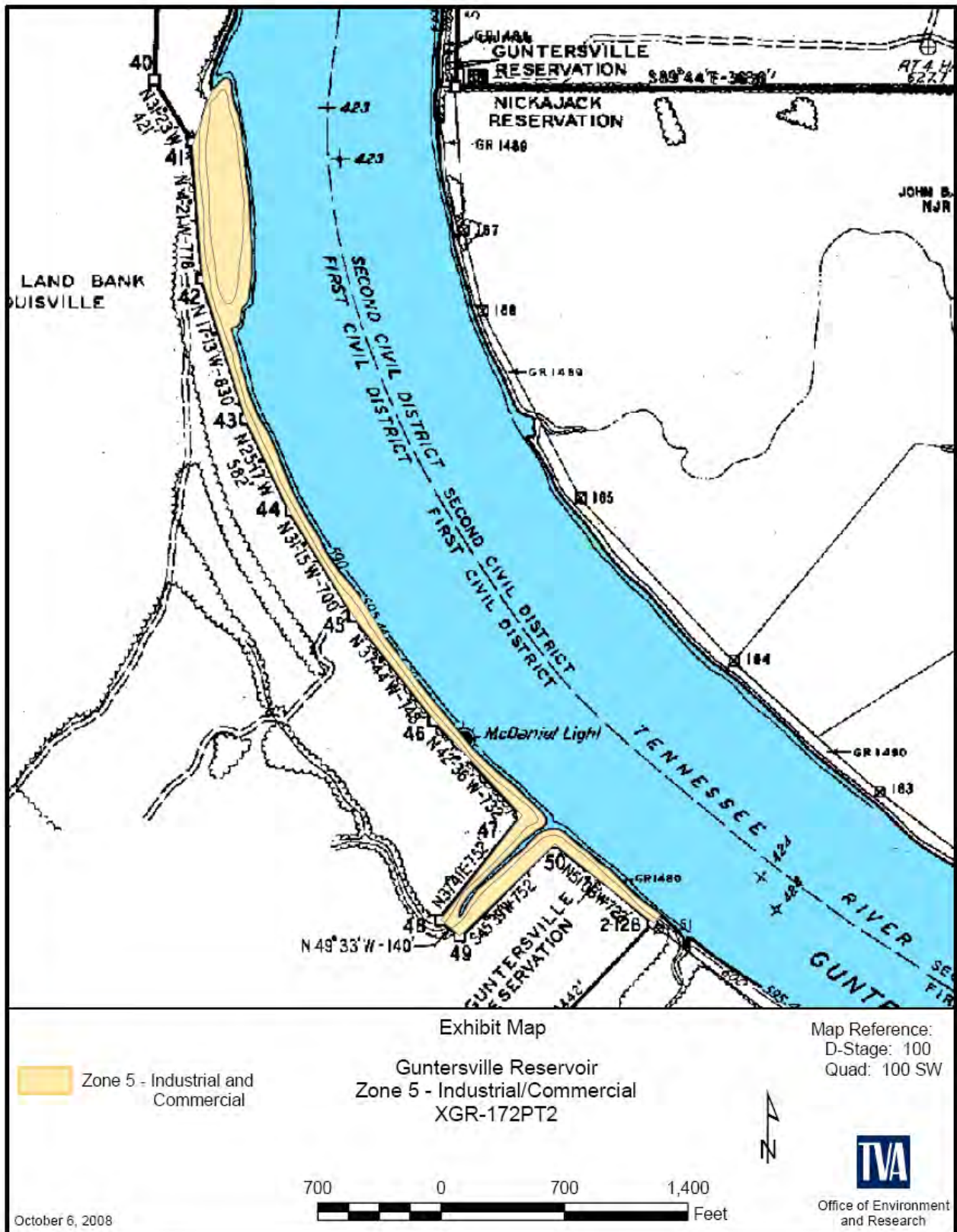


Figure 1-3. Map of TVA Tract XGR-172PT2

1.4. Necessary Permits or Licenses

Approval under Section 26a of the *TVA Act*, as amended, is required for the construction of any obstructions in and along the Tennessee River or its tributaries. CBI has submitted a Section 26a application (Appendix A) for the proposed development. CBI has also requested from TVA a 30-year term industrial easement for use of approximately 1.1 acres of TVA property. In addition, TVA anticipates an easement request from CBI, CSX, Marion County Railroad Authority, or Nickajack Port Authority for a new rail line.

As indicated in Section 1.1 above, the construction of the launching ramp and crane platform and placement of fill in the reservoir require approval by USACE under Section 10 of the RHA and Section 404 of the CWA. The evaluation of the impact of the activity on the public interest will include application of guidelines promulgated by the U.S. Environmental Protection Agency (USEPA) under Section 404(b)(1) of the CWA. Before a Section 404 permit or Section 26a approval can be issued, certification must be provided by the State of Tennessee, Division of Water Pollution Control, pursuant to Section 401(a)(1) of the CWA, that applicable water quality standards will not be violated.

A Section 401 Water Quality Certification and/or Tennessee Aquatic Resource Alteration Permit from the Tennessee Department of Environment and Conservation (TDEC), Division of Water Pollution Control, would be required for the project. Storm water authorizations and National Pollutant Discharge Elimination System permits for storm water discharges from TDEC may be required for some development activities.

CHAPTER 2

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

TVA and USACE have considered the direct, indirect, and cumulative effects that would be caused by the federal actions related to the CBI application. Construction of the fabrication plant and new rail line and the TL relocation are dependent upon the easement, launching ramp, and crane platform approvals. Therefore, the areas assessed in this EA include the CBI private property, proposed industrial easement area, TL relocation right-of-way, and anticipated new rail line route (Figure 2-1).

In its application to TVA and USACE, CBI indicated that no federal financial assistance will be used for this project. CBI proposes to fund the total project costs, estimated to be about \$110 million. Other than assessing the indirect and cumulative effects on resources caused by their approvals, TVA and USACE have neither control nor responsibility for actions taken by CBI on its private land.

2.1. Alternatives

2.1.1. *Alternative A – The No Action Alternative*

Under the No Action Alternative, TVA would not grant the term industrial easement or relocate the TL, and TVA and USACE would not issue the requested Section 26a, Section 10, and Section 404 approvals. CBI could develop its private property without TVA and/or USACE permits or grants. CBI would be required to follow all applicable federal, state, and local laws in any development of the back-lying property. Additionally, TVA Tract XGR-172PT2 would remain allocated for industrial/commercial development. TVA would continue to consider other applications for compatible industrial development on the property.

2.1.2. *Alternative B – Applicant's Proposal*

Under the Action Alternative, TVA and USACE would grant CBI the necessary easement and permits to construct the launching ramp, crane platform, and associated facilities. TVA would also relocate the existing 161-kV TL and grant the appropriate land use permissions for the new rail line.

CBI would construct an approximate 500,000-square-foot manufacturing building. As an integral part of designing the facility to conform with Leadership in Energy and Environmental Design standards, crushed stone, pervious overlays, and riprap would be installed for surface treatment and shoreline protection. The facilities have also been designed to maximize open spaces, preserve two wooded areas and two wetlands, and minimize erosion from storm water runoff that would affect the property boundaries and adjacent lands and waters.



Figure 2-1. Areas Assessed in this Environmental Assessment

In order to construct the launching ramp and crane platform, CBI proposes to place fill material along approximately 350 feet of shoreline. The fill material would extend into the reservoir approximately 90 feet. The launching ramp would be located entirely above normal summer pool with dimensions of 100 feet wide and 550 feet long. CBI would excavate 29,256 cubic yards and backfill 10,461 cubic yards of material for the construction of the launching ramp. Overall, approximately 18,800 cubic yards of material would be removed for the construction of the launching ramp. The spoil material would be deposited on the property (Figure 2-2). The crane platform would be constructed 200 feet wide and approximately 175 feet long. CBI would excavate 21,793 cubic yards and backfill 102,433 cubic yards of material for the construction of the crane platform. Overall, approximately 61,840 cubic yards of material would be placed in the reservoir. Approximately 24,145 cubic yards of material would be filled between elevations 593 feet mean sea level (msl) and 619.5 feet msl. The proposed launching ramp and crane platform are described in detail in Appendix A.



Figure 2-2. Proposed Spoil Location Map

CBI would design best management practices (BMPs) to be implemented in accordance with the *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002) and the General NPDES Permit for Discharges of Storm Water Associated with Construction Activities, Permit No. TNR100000. A toolbox of BMPs would be designed to function in concert with treatment plans to control potential storm water pollutants. In addition, BMPs would be implemented in phases so that the correct BMP selection and implementation occur with

the appropriate stage of construction and site development activities. Detailed explanations of these BMPs are listed in Appendix B.

The launching ramp and crane platform would be used as a roll-on, roll-off type barge terminal to load the finished container vessels onto barges for shipment via the inland waterway system. CBI anticipates shipping up to four container vessels per month. Barges would not fleet at CBI between shipments.

CBI proposes to install one storm water outfall to the Tennessee River and two storm water outfalls to Graham Branch. The storm water runoff would occur from the fabrication plant and administration buildings' roofs, parking areas, and near the launching ramp and crane platform. The outfalls would be no greater than 60 inches in size. The proposed storm water outfalls are described in detail in Appendix A.

TVA has also received a request to relocate a 161-kV TL that crosses the area of the proposed CBI fabrication plant (Appendix B). In order to accommodate this request, CBI would purchase a portion of the neighboring property. The TL would be relocated to this newly purchased property. The TL would then turn and cross the southwest portion of the CBI property. Lastly, the TL would turn and follow Port Road and reconnect with the existing portions of the TL (Figure 2-1). CBI would convey to TVA a 100-foot-wide right-of-way along the entire route of the TL relocation. TVA would follow the environmental compliance criteria (Appendix B) during the construction and future maintenance of the TL.

CBI would also need rail access to its property. CBI would need three rail lines to service the fabrication plant. The new rail line would be approximately 4,700 feet long and 150 feet wide. The nearest rail line is located to the southeast of the CBI property and operated by CSX. The new rail line would connect with the existing CSX line and would cross TVA and Nickajack Port property (Figure 2-1 and Appendix B). TVA anticipates a land use request for the new rail line from CBI, CSX, Marion County Railroad Authority, or Nickajack Port Authority.

2.2. Comparison of Alternatives

Under the No Action Alternative, TVA would not grant the term industrial easement or relocate the TL, and TVA and USACE would not issue the requested Section 26a, Section 10, and Section 404 permits. CBI could develop its private property without TVA and/or USACE permits or grants. CBI would be required to follow all applicable federal, state, and local laws in any development of the back-lying property. TVA Tract XGR-172PT2 would remain allocated for industrial/commercial development in the foreseeable future. TVA would continue to consider other applications for compatible industrial development on the property.

Under the Action Alternative, TVA and USACE would grant the easement and permits for the proposed launching ramp, crane platform, and associated facilities. TVA would also relocate the existing 161-kV TL and grant the appropriate land use permissions for the new rail line. Both alternatives are consistent with the Plan's allocation of TVA Tract XGR-172PT2 for industrial/commercial development.

Under either alternative, there would be no impacts to unique or important terrestrial animal habitats, natural areas, and allocated land uses. Under the Action Alternative, direct, indirect, and cumulative impacts to water quality, aquatic ecology, wetlands, terrestrial plant

communities, wildlife, visual resources, prime farmland, floodplains, recreation, navigation, traffic, and socioeconomics would be insignificant with the inclusion of the mitigation measures and conditions listed in Section 3.15.

There are no known populations or habitats to support populations of federally or state-listed plant or terrestrial animal species within the project area. Impacts to the listed aquatic species known to occur within the project area could occur. However, with the conditions identified in Section 3.3, Aquatic Ecology, and Section 3.4.1, Threatened and Endangered – Aquatic Species, impacts to listed aquatic species would be minimized. With this mitigation, the Action Alternative would not jeopardize the continued existence of the pink mucket mussel, Anthony's riversnail and other federally listed aquatic species.

The Action Alternative could adversely affect cultural resources. Section 3.1, Cultural Resources, identifies an agreement for phased-compliance treatment plans for any archaeological site potentially adversely affected by the proposed action.

2.3. The Preferred Alternative

TVA's preferred alternative is the Action Alternative, i.e., the approval of the applicant's proposal with the mitigation measures listed in Section 3.15. USACE has no preferred alternative as its regulations prevent it from being for or against an applicant's proposal during permit or approval evaluations.

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CHAPTER 3

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Guntersville Dam is located at TRM 349.0; Guntersville Reservoir extends 76 river miles upstream to Nickajack Dam, located at TRM 424.7. At full pool, Guntersville Reservoir has a surface area of 67,900 acres and approximately 890 miles of shoreline. The CBI proposal would affect approximately 730 feet of shoreline or less than 1 percent of the shoreline along Guntersville Reservoir. TVA owns approximately 40,236 acres of property along Guntersville Reservoir, and CBI has requested that TVA grant an easement over approximately 1.1 acres. The CBI proposal would affect less than 1 percent of all TVA-owned property along Guntersville Reservoir.

The CBI proposal is located on a portion of TVA Tract XGR-172PT2. This 16.725-acre tract is located adjacent to the Nickajack Port property and 0.6 mile downstream of Nickajack Dam along the left-descending bank (Figure 1-3). The Plan (TVA 2001) allocated TVA Tract XGR-172PT2 for industrial/commercial development. The proposed easement for CBI would occupy approximately 7 percent of this tract. The remaining portion of TVA Tract XGR-172PT2 would remain allocated for industrial/commercial development.

Currently, there are no other major development projects being proposed within the project area. However, TVA is currently preparing an environmental review (forthcoming) for a commercial marina request (Rarity Club at Nickajack Lake) at TRM 426.9 right bank (R) on Nickajack Reservoir. Although the CBI and commercial marina requests are separated by Nickajack Dam, the commercial marina request is included within the cumulative impacts assessment of this EA.

3.1. Cultural Resources

Affected Environment

The area surrounding the CBI property has been occupied by humans for over 15,000 years. The archaeological record of the Tennessee River Valley has documented four major prehistoric occupational periods that began with the Paleo-Indian Period (14,000-8000 B.C.). This period is best characterized by highly mobile bands mostly dependent upon hunting for subsistence. Faunal remains found from archaeological records indicate these early hunters were not exclusively reliant upon large game mammals but also were dependent upon smaller game animals as well as plant foods. This cultural period is best known for its large fluted projectile-point technology referred to as Clovis.

Around 8000 B.C., an increase in population brought the establishment of more permanent habitation sites with the Archaic Period (8000-900 B.C.). As a result, there was a change in technology as groups adapted to the utilization of regional resources with added regional stylistic varieties in projectile-point technology. Archaic cultures saw great changes in climate, which stabilized floodplains and allowed for an increase in riverine habitation with a growing dependence on marine resources for subsistence and culture. During this period, the first shell mounds appeared along the Tennessee River.

A significant transition occurred around 900 B.C. with the addition of ceramic technology associated with the Woodland Period (900 B.C.-A.D. 1100). In addition to this new technology, more sedentary populations and an increase in floodplain horticulture occurred. Woodland peoples supplemented their hunting subsistence with both the cultivation of early domesticated plants and gathering of seasonal nuts and acorns. With an increase in mound building and trade, shellfish gathering was noticeably absent.

The final prehistoric occupation documented in this region is the Mississippian Culture (A.D. 1100-1630). During this time, population, village size, and horticulture practice were markedly increased. Full domestication of plants was found with the dependence on maize, beans, and squash horticulture. Diets continued to be supplemented with small mammals and river fish, mussels, and gastropods. Large Mississippian village sites with mound complexes have been identified across the Tennessee Valley. A widespread trade network is indicated by the presence of copper ornaments, greenstone celts, and effigy pipes in the archaeological record. The Mississippian cultures of this region were also participants in the Southeast Ceremonial Complex represented by such art images as the weeping eye, sun symbol, and other motifs interpreting Mississippian religious beliefs.

Toward the end of the Mississippian Period, large mound complexes declined as settlement practices shifted toward smaller occupational sites. During this time, changes related to early European contact and the decrease of occupation in the region surrounding the project area can be seen.

In the late 1700s, the area was again occupied by a group of disgruntled Cherokees, roving bands of Creeks, Shawnees, and other tribal groups that collectively became known as the Chickamaugas. Led by Chief Dragging Canoe, this group settled several towns in the area that became known as the "Five Lower Towns." Nearby Running Water Town functioned as the headquarters and home of Chief Dragging Canoe. Other towns in the area included Nickajack Town, Lookout Mountain Town, Long Island Town, and Crowtown, all located within the vicinity of the CBI property. The Chickamaugas fought several battles and resisted their removal. They later reconciled with the Cherokee Nation in 1794 and fought alongside them for preservation of the remaining Cherokee lands. Soon thereafter, after several battles, the Lower Five Towns were sparsely occupied until the time when the last groups of Cherokees, led by Chief John Ross, were removed from the area along the Trail of Tears (Alexander and Redwine 2008).

Marion County was formed from former Cherokee lands in 1817 following a treaty that gave much of the land north of the Tennessee River to the newly created county. Jasper became the county seat in 1819, and the first courthouse, built on a 40-acre tract formerly belonging to Cherokee Betsy Pack, was established in 1820 (Beene 1998).

The county was torn during the Civil War, being made up of family members and visitors from both sides. The county saw an increase in iron and coal mining industries following the war. Lodge Cast Iron was established during this time and is still one of the oldest manufacturing firms in the area. The county got its first hydroelectric power with the construction and operation of Hales Bar Dam in 1912, later replaced by TVA's Nickajack Dam in 1967. Marion County's most recent industry is the manufacturing of fireworks (Beene 1998).

Previous archaeological surveys of the Guntersville Reservoir area have identified over 1,000 archaeological sites dating from the Paleo-Indian throughout the historic periods. A

number of these sites are located in the vicinity of the CBI property. Previous archaeological investigations of the project area identified three previously recorded sites (40MI70, 40MI213, and 40MI214). Sites 40MI70 and 40MI213 were recommended as potentially eligible for listing in the National Register of Historic Places (NRHP).

TVA Cultural Resources staff, in consultation with the Tennessee State Historic Preservation Officer (SHPO) and the USACE, has determined the area of potential effects (APE) for this project to be the private development and adjacent TVA fee-owned property for archaeology and the viewshed for historic structures to be a 0.5-mile radius beyond this construction.

A Phase I archaeological survey was conducted within the APE for the project. The three previously recorded archaeological sites were revisited. Results of all of the archaeological work conducted on 40MI70 indicate this site meets the criteria for eligibility in the NRHP. Site 40MI213 was again recommended for additional testing to determine its eligibility for the NRHP, and 40MI214 was considered ineligible. Two additional sites (40MI208 and 40MI281) were identified and considered ineligible. The SHPO concurred with the eligibility of Sites 40MI170 and 40MI213 in a letter dated October 14, 2008 (Appendix C) and sites 40MI214, 40MI208, and 40MI281 in an e-mail dated November 7, 2008.

There are no historic structures located on TVA Tract XGR-172PT2. TVA has requested that the applicant complete a historic structure survey to identify any standing historic structures within the viewshed that may be adversely affected by the proposed development. An inventory of all buildings and engineering structures more than 50 years old within the APE would be conducted. The APE for historic structures would include the proposed development tract and any areas that would have a visual connection to the parcel (0.5-mile radius). At the time of publication of the draft EA, the results of this survey had not been submitted for TVA's review.

Environmental Consequences

One potentially eligible site (40MI213) and one eligible site (40MI70) have been identified within the APE for the proposed project. Current project plans could adversely affect these resources. Pursuant to 36 CFR § 800.4(b)(2), TVA is preparing a memorandum of agreement (MOA) for phased compliance with the Section 106 process of the *National Historic Preservation Act*. This agreement will be executed by TVA, the USACE, and the SHPO. Other participating parties will include CBI and federally recognized Indian tribes with an interest in this area. This MOA will stipulate the process for identification, evaluation, and treatment of eligible historic properties within the APE. Phase II testing is being conducted on 40MI213 in order to determine its eligibility for the NRHP. TVA is working with the applicant to identify options for avoidance of these resources. Any archaeological site or historic structure that is determined by TVA, in consultation with the USACE and SHPO, to be adversely affected by the proposed action would be subject to the treatment plans stipulated in the MOA.

3.2. Water Quality

Affected Environment

Precipitation in the project area averages about 63 inches per year with the wettest month in March at 6.8 inches and the driest month in October at 3.7 inches. The average annual air temperature is 57 degrees Fahrenheit (°F), ranging from a monthly average of 38°F in

January to 78°F in July. Streamflow varies with rainfall and averages about 27 inches of runoff per year or approximately 2 cubic feet per second per square mile of drainage area.

The project area drains to Graham Branch and Gunter'sville Reservoir on the Tennessee River. Graham Branch is classified by TDEC for fish and aquatic life, recreation, irrigation, and livestock watering and wildlife. This section of the Tennessee River is classified for domestic and industrial water supply, fish and aquatic life, recreation, irrigation, livestock watering and wildlife, and navigation. Graham Branch has been placed on TDEC's 303(d) list as impaired (i.e., not fully supporting its designated uses) due to *Escherichia coli* from septic tanks (TDEC 2006a).

TVA initiated a Vital Signs Monitoring Program in 1990 to monitor the ecological conditions of its reservoirs using indicator parameters as a measure of overall ecological health. TVA has monitored the ecological health of Gunter'sville Reservoir every two years since 1994. In the seven monitoring years from 1994 through 2006, the reservoir has consistently rated good (TVA 2008). Dissolved oxygen levels rated good at both monitoring locations in 2006, similar to previous years. Sediment quality rated good at both monitoring locations, because no polychlorinated biphenyls (PCBs) or pesticides were detected, and no metals had elevated concentrations. Sediment quality typically rates fair at the reservoir forebay (located approximately 75 miles downstream of the project area), due to the presence of one or more contaminants: PCBs, chlordane, or zinc. The sediment rating at the mid-reservoir has fluctuated between good and fair due primarily to chlordane, which was detected in 1996, 2002, and 2004; PCBs were detected at this location in 2002.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the easement and permits. There would be no project-related changes in existing surface water or water quality conditions.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Soil disturbances associated with construction activities can potentially result in adverse surface water impacts. Soil erosion and sedimentation can clog small streams and threaten aquatic life. Removal of the tree canopy along streams and the reservoir shoreline can increase water temperatures, algal growth, dissolved oxygen depletion, and adverse impacts to aquatic biota.

In addition to construction activities, improper operations, wastewater disposal, control of surface runoff, and handling of site materials and potential pollutants could result in adverse water quality impacts. For example, pollutant spills can adversely affect aquatic life, and nutrient runoff can increase primary productivity (algae growth). As algae populations die, their decomposition in deep waters of the reservoir could reduce oxygen concentrations during the summer months. Improper use of herbicides to control vegetation can result in runoff to streams and subsequent aquatic impacts.

BMPs and precautions in the design, construction, and operation of the proposed facility are expected to minimize these potential impacts. No industrial wastewaters or process cooling water discharges would be associated with the facility. Domestic wastewater service would be provided by the South Pittsburg Water and Sewer Department. No stockpiles or other outside storage of potential pollutants is planned. Compliance with applicable environmental laws and regulations, use of BMPs and control measures during construction to prevent the runoff or discharge of potential pollutants to the reservoir, and

proper operation of the facility are expected to result in only minor temporary impacts to surface waters. No cumulative surface water impacts are anticipated.

3.3. Aquatic Ecology

Affected Environment

The proposed facility would be located on the Tennessee River downstream of Nickajack Dam. With the exception of flow regulation, this tailwater area shares many characteristics of the former, free-flowing main stem Tennessee River. Aquatic habitat in the littoral (near-shore) zone is greatly influenced by underwater features, topography, and back-lying land use. Underwater features include the presence of woody stumps, debris, rocks, logs, or other structures. Undeveloped shoreline is mostly wooded; therefore, fallen trees and brush provide woody cover in those areas. Shorelines lacking woody vegetation still can provide suitable habitat; in fact, aquatic habitat can actually be improved by placement of riprap. Rock is an important constituent of littoral aquatic habitat over much of the reservoir, either in the form of bedrock outcrops or in a mixture of rubble and cobble on steeper shorelines or gravel along shallower shorelines. Substrate and available aquatic habitat in coves and embayments also typically correspond to shoreline topography and vegetation.

TVA initiated a Vital Signs Monitoring Program in 1990 to monitor the ecological conditions of its reservoirs using indicator parameters as a measure of overall ecological health. Reservoir and stream monitoring programs were combined with TVA's fish tissue and bacteriological studies to form an integrated Vital Signs Monitoring Program. Vital signs monitoring activities focus on benthic macroinvertebrate community sampling, fish assemblage sampling, and physical and chemical characteristics of waters and sediments. The physical and chemical characteristics' portions of waters and sediments are discussed in Section 3.2, Water Quality. Each indicator is evaluated separately and then individual ratings are combined into a single, composite score for each reservoir. The ecological health condition of Guntersville Reservoir has rated good consistently from 1994 through 2006. As in previous years, 2006 ecological health indicator scores for the reservoir were among the highest observed for all TVA reservoirs.

Guntersville Reservoir was monitored on a biennial basis from 2002 to 2006. Because collection methods and rating criteria for the fish and benthic communities were different prior to 1994, those results cannot be compared directly to samples taken using current methods. Therefore, the results of sampling events prior to 1994 are not presented in this document.

Benthic macroinvertebrates (insects and mussels) are included in aquatic monitoring programs because of their importance to the aquatic food chain. Benthic macroinvertebrates have limited capability of movement, thereby preventing them from avoiding unsuitable conditions. TVA samples benthic macroinvertebrates about 4 miles downstream of the project site at TRM 420. Over the past 14 years, this sampling location has rated "fair" or "good" (Table 3-1). These ratings are indicative of the altered habitat conditions typically found in tailwaters of dams on the Tennessee River.

Table 3-1. Recent (1994-2006) Benthic Community Scores Collected as Part of the Vital Signs Monitoring Program Near the Project Site

Guntersville Reservoir Station	1994	1996	1998	2000	2002	2004	2006
	Score						
TRM 420	Fair	Good	Fair	Good	Good	Good	Fair

The 8.2-mile portion of the Tennessee River downstream of Nickajack Dam (TRM 424.7) to the Tennessee-Alabama state line (TRM 416.5) has been designated as a state mussel sanctuary by the Tennessee Wildlife Resources Agency (TWRA). This designation prohibits the taking of aquatic mollusks by any means and/or willful destruction of their habitat. To protect the mussel sanctuary further, diving with the aid of a mechanical device is prohibited without written authorization from the TWRA director. TWRA establishes mussel sanctuaries to protect federally or state-listed mussel species and their habitats. The mussel fauna in this general area of the Tennessee River has changed dramatically over the last century. Many species have been eliminated due to the loss of riverine habitat following the construction of impoundments. Riverine habitats are now found only in the tailwaters of dams. However, other more tolerant mussel species have increased in numbers in the shallow overbank areas of reservoir pools.

The Vital Signs Monitoring Program has included biennial fish sampling on Guntersville Reservoir from 2002 until 2006. Fish are included in aquatic monitoring programs because of their importance to the aquatic food chain and to the public for aesthetic, recreational, and commercial reasons. In addition, fish have a long life cycle, which allows them to reflect water quality conditions over an extended period. Fish ratings are based primarily on the community structure and function using the Reservoir Fish Assemblage Index (RFAI). However, RFAI also considers the overall number of fish collected, the percentage of the sample represented by omnivore and insectivores, and presence of diseases, lesions, parasites, deformities, etc. (TVA 1999). The fish community near the proposal area has consistently rated “good” with the exception of 2006, which rated “fair” (Table 3-2).

Table 3-2. Recent (2002-2006) Reservoir Fish Assemblage Index Scores Collected as Part of the Guntersville Reservoir Vital Signs Monitoring Program Near the Project Site

Guntersville Reservoir Station	2002	2004	2006
	Score		
Inflow TRM 424	Good	Good	Fair

A Sport Fishing Index (SFI) has been developed to measure sport fishing quality for various species in Tennessee and Cumberland Valley reservoirs. The SFI is based on the results of fish population sampling by TVA and state resource agencies and, when available, results of angler success as measured by state resource agencies (i.e., bass tournament results and creel surveys). In 2006, Guntersville Reservoir rated above the Valleywide average for black bass, largemouth bass, and spotted bass (Table 3-3).

Table 3-3. Sport Fishing Index Scores for Selected Fish Species in Guntersville Reservoir and Valleywide, 2006

Fish Species	Guntersville 2006 Score	Valleywide 2006 Average
Black Bass	37	36
Largemouth Bass	52	33
Spotted Bass	32	31

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be no project-related changes to the existing environmental conditions, resulting in no effects to aquatic ecology.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Aquatic life would be most directly affected by construction of the loading ramp and barge loading facility. Because substantial mussel resources exist within the footprint of the proposed launching ramp and loading facility area, the special conditions identified in Section 3.4.1, Threatened and Endangered – Aquatic Species, would be implemented to minimize impacts to mussels.

Aquatic life would also be indirectly impacted due to the modification of the riparian zone along the shoreline, storm water runoff from CBI property, and the construction associated with the TL relocation. Potential impacts due to the modification of the riparian zone include increased erosion and sedimentation, loss of aquatic habitat, and increased water temperatures in Graham Branch. Other potential construction and maintenance impacts to Graham Branch and/or Guntersville Reservoir include runoff containing silt and alteration of stream banks and stream bottoms by heavy equipment.

Runoff of silt and subsequent in-stream sedimentation has a detrimental effect on many aquatic animals adapted to riverine habitats. Turbidity, caused by suspended sediment, can negatively impact spawning and feeding success of many fish species. Likewise, mussel species that have adapted to a sand and gravel bottom habitat cannot survive for long periods in a habitat that is composed of fine sediment. The fine sediment clogs the mussels' gills, smothering the animals (Parmalee and Bogan 1998). Most of the common fish species present in this area are more tolerant of sedimentation.

With proper implementation of BMPs and the following conditions included in TVA's Section 26a approval, the direct, indirect, and cumulative impacts to aquatic ecology associated with the Action Alternative would be insignificant:

Standard Conditions

- You agree to use erosion control measures around any material stockpile areas.
- You agree to avoid contact of wet concrete with the stream or reservoir and avoid disposing of concrete washings or other substances or materials in those waters.

Additional Conditions

- Prior to construction, CBI would develop and submit for TVA's approval a vegetation management plan (VMP) for Graham Branch and its tributaries. The VMP would include standard shoreline management zones (SMZs) as defined in Muncy (1999).

3.4. Threatened and Endangered Species**3.4.1. Aquatic Species****Affected Environment**

Several federally and state-listed aquatic animal species are present in Marion County, Tennessee, or in the affected watershed (Table 3-4). The majority of these species are found only in the Paint Rock River or Sequatchie River systems and do not occur in areas potentially affected by the proposed activities. In addition, some of the species listed are historical records and are no longer believed to occur (Appendix D, Table D-1). The remaining species, highfin carpsucker, snail darter, pink mucket, Anthony's riversnail, armored rocksnail, smooth mudalia, corpulent hornsnail, warty rocksnail, and spiny riversnail, potentially occur within the project area (Table 3-4).

Table 3-4. Federally and State-Listed Aquatic Species Known From Marion County and/or Within the Potentially Affected Watersheds of the Project Area

Common Name	Scientific Name	State Status (Rank)		Federal Status
		Alabama	Tennessee	
Fish				
Flame chub *	<i>Hemitemria flammea</i>	--	NMGT (S3)	--
Golden darter *	<i>Etheostoma denoncourtii</i>	--	NMGT (S2)	--
Highfin carpsucker	<i>Carpionodes velifer</i>	--	NMGT	--
Snail darter	<i>Percina tanasi</i>	--	THR (S2S3)	THR
Mussel				
Pink mucket	<i>Lampsilis abrupta</i>	--	END (S2)	END
Snails				
Anthony's riversnail	<i>Atheurnia anthonyi</i>	--	END (S1)	END
Armored rocksnail	<i>Lithasia armigera</i>	--	TRKD (S1S2)	--
Corpulent hornsnail	<i>Pleurocera corpulenta</i>	TRKD (S1)	--	--
Royal marstonia *	<i>Pyrgulopsis ogmorhappe</i>	--	END (S1)	END
Smooth mudalia	<i>Leptoxis virgata</i>	--	TRKD (S1)	--
Spiny riversnail	<i>Io fluviialis</i>	--	TRKD (S2)	--
Varicose rocksnail *	<i>Lithasia verrucosa</i>	TRKD (S3)	--	--
Warty rocksnail	<i>Lithasia lima</i>	--	TRKD (S2)	--
Insect				
Owen spring*	<i>Glyphopsyche sequatchie</i>	--	TRKD (S1)	CAND

*Species does not occur within the affected watershed.

-- = Not applicable

Status codes: CAND = Candidate; END = Endangered; NMGT = In need of management; THR = Threatened; TRKD = Tracked as sensitive, but has no legal status

State ranks: S1 = Critically imperiled; S2 = Imperiled; S3 = Vulnerable; S#S# = Occurrence numbers are uncertain

Brief descriptions of species found within the affected watersheds are below. Habitat requirements for fish are from Etnier and Starnes (1993), for mussels from Parmalee and Bogan (1998), and for insects and snails from NatureServe (2008).

The **highfin carpsucker** is widespread but uncommon in the Tennessee River system. This fish prefers a habitat of gravel substrate in relatively clear, medium to large rivers.

The **snail darter** occurs in large creeks and small rivers where it prefers sand and gravel shoal areas. It is also known to occur in deeper rivers and reservoirs where current is present. Larvae drift long distances downstream to deeper areas and migrate back to spawning habitat during late summer. Snail darters are known from the Sequatchie River and main stem areas of the Tennessee River downstream of its confluence with the Sequatchie. It has not been reported from areas immediately adjacent to the project site.

The **pink mucket** is typically a big river species, but occasionally individuals become established in small to medium-sized tributaries of large rivers. It inhabits rocky bottoms with swift current usually in less than 3 feet of water.

The **Anthony's riversnail** prefers large rivers with cobble/boulder substrate near riffles.

The **armored rocksnail** is endemic to the Ohio River system and is historically known in the Tennessee River and Shoal Creek near Florence, Alabama. This species prefers creeks with fallen logs and debris and has been reported from the Cumberland River on partially buried wood, gravel, and submerged rock outcrops.

The **corpulent hornsnail** can only be found in the Tennessee River between Bridgeport and Florence, Alabama, and Battle Creek at Ketchall, Marion County, Tennessee. Only five occurrences have been documented to date, thus leaving much unknown about the life history of this species.

The **smooth mudalia** is endemic to the Tennessee River drainage. Currently very little is known about the life history of the smooth mudalia.

The **spiny riversnail** prefers medium rivers with shallow shoals that are well oxygenated by rapid water.

The **warty rocksnail** inhabits big to medium-sized rivers with a moderate gradient. It is believed to prefer rocky substrates in riffle systems.

As discussed in Section 3.3, an approximate 8.2-mile portion of the Tennessee River downstream of Nickajack Dam (TRM 424.7) to the Tennessee-Alabama state line (TRM 416.5) has been designated as a state mussel sanctuary by the TWRA. A mussel sanctuary designation prohibits the taking of aquatic mollusks by any means and/or willful destruction of their habitat. No federally designated critical habitat areas are present within the project area.

A mussel survey of the project area was conducted on September 15, 2008. The survey methods and complete mussel survey results are located in Appendix D. The federally listed as endangered pink mucket mussel was the only listed mussel species found within the area of the proposed facilities.

A snail survey of the project area was conducted on October 7 and 8, 2008. The survey methods and complete snail survey results are located in Appendix D. No listed snail species were found within the project area. Upon further discussions with the U.S. Fish and Wildlife Service (USFWS), Anthony's riversnail is likely to occur within the project area.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be no changes to the existing environmental conditions resulting in no impacts to threatened or endangered species within the project area.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Aquatic life would be most affected by construction of the loading ramp and barge loading facility. The federally listed as endangered pink mucket mussel was identified during the mussel survey mentioned above. The direct impacts associated with the Action Alternative and the indirect impacts creating a change in the aquatic ecology would potentially adversely impact the pink mucket mussel and Anthony's riversnail.

TVA is formally consulting with the USFWS regarding potential impacts to federally listed species (primarily the pink mucket and Anthony's riversnail). A biological assessment (BA) is being prepared by TVA and will be submitted to the USFWS. TVA is currently developing an array of potential commitments and mitigation measures to protect the pink mucket mussel and Anthony's riversnail. Among those potential commitments are the following, which, if implemented, TVA, USACE, and CBI would enforce to protect the pink mucket mussel. TVA would also prepare commitments to protect Anthony's riversnail. Similar commitments to those listed below or other appropriate mitigation measures will be located within the Terms and Conditions outlined in the BA. Formal consultation with the USFWS is ongoing, and the commitments agreed upon by USFWS, TVA, USACE, and CBI, as well as the USFWS biological opinion (BO), will be listed in the final EA.

- Any individuals of federally listed mussels encountered during preconstruction survey as outlined in the draft Unionid Mussel Translocation Plan would be relocated (Appendix E).
- Site-specific BMPs needed to protect listed species would be implemented (Appendix B).
- Success of transplant activities as outlined in the draft Unionid Mussel Translocation Plan would be monitored by CBI (Appendix E).

The proposed action would affect listed aquatic species. However, with the conditions identified in Section 3.3, Aquatic Ecology, the Terms and Conditions outlined in the BA, and adherence to proper BMPs, impacts to listed aquatic species would be minimized. The BO would discuss in detail the potential "take" of federally listed species. With this mitigation, the Action Alternative would not jeopardize the continued existence of the pink mucket mussel and other federally listed aquatic species. Because snail darters are not present in areas directly or indirectly affected by this action, construction and operation of the facilities is not likely to adversely affect the snail darter.

3.4.2. Terrestrial Animals

Affected Environment

Seven state-listed terrestrial animal species occur in Marion County, and four of these species are present within 3 miles of the project site. With the exception of the barking treefrog and bald eagle, all of these species are found only in caves or similar rock outcrop habitats. No caves or rock outcrop sites exist within the project site.

In addition, two federally listed species, gray bat and Indiana bat, are reported from Marion County, Tennessee (Table 3-5). No designated critical habitats for federally listed terrestrial animal species are known from Marion County.

Table 3-5. Federally Listed Terrestrial Animal Species Reported From Marion County and State-Listed Terrestrial Animal Species Reported From Within 3 Miles of the Project Site

Common Name	Scientific Name	Federal Rank	State Status (Rank)
Amphibians			
Tennessee cave salamander	<i>Gyrinophilus palleucus</i>	--	THR (S2)
Barking treefrog	<i>Hyla gratiosa</i>	--	NMGT (S3)
Bird			
Bald eagle	<i>Haliaeetus leucocephalus</i>		NMGT (S3)
Mammals			
Gray bat	<i>Myotis grisescens</i>	END	END (S2)
Eastern small-footed bat	<i>Myotis leibii</i>	--	NMGT (S2S3)
Indiana bat	<i>Myotis sodalis</i>	END	END (S1)
Allegheny woodrat	<i>Neotoma magister</i>	--	NMGT (S3)
Invertebrates			
Nickajack Cave beetle	<i>Pseudanophthalmus nickajackensis</i>	--	TRKD (S1)
Nickajack Cave isopod	<i>Caecidotea nickajackensis</i>	--	TRKD (S1)

-- = Not applicable

Status codes: END = Endangered; NMGT = In need of management; THR = Threatened; TRKD = Tracked by the Tennessee Natural Heritage Program

State ranks: S1 = Critically imperiled; S2 = Imperiled; S3 = Rare or uncommon

Tennessee cave salamanders occur in caves with streams free of sedimentation. There are historical records of this salamander from Nickajack Cave before it was flooded by the reservoir. Suitable habitat still exists in portions of Nickajack Cave beyond the influence of Nickajack Reservoir. All other cave records are greater than 1.5 miles from this site, and suitable habitat for this species does not occur within the affected project area.

Barking treefrogs occur in wetlands, and a population is known from the town of New Hope, just west of the project site. Although not recorded immediately adjacent to the Nickajack tailwaters, some wetlands offering moderately suitable habitat occur on Burns Island and in the vicinity. There are two small wetlands located on CBI private property that could provide habitat for barking treefrogs. These wetlands would be avoided by construction activities.

Bald eagles have recently been removed from the endangered species list, but are still protected by the *Bald and Golden Eagle Act* and the National Bald Eagle Management Guidelines (USFWS 2007). This species typically nests in forested habitats near large bodies of waters such as reservoirs and rivers. Nesting and post-breeding bald eagles are regularly observed throughout the reservoir system, and numerous nests occur along Nickajack and Guntersville reservoirs. Four bald eagle nests occur downstream of Nickajack Dam; these nests are all more than 0.8 mile away from the project site. Two of these nests are adjacent to the tailwaters of Nickajack Dam, one in Guntersville Reservoir, and one along the Sequatchie River. Suitable habitat for bald eagles is abundant in the region. Bald eagles have not been observed nesting on or immediately adjacent to the project site.

The federally listed **gray bat** roosts in caves year-round, particularly along the Tennessee River, over which they forage. A very large summer colony of this species occurs in Nickajack Cave. This species also occasionally uses Little Cedar Mountain Cave transitionally during migration and after the breeding season. Both of these caves are more than 1.5 miles from the project site. All other caves offering suitable roosting habitat are located even farther from the project site. This species may forage up to 9-21 miles from their roost (Thomas and Best 2000) and forage above and below Nickajack Dam. Abundant foraging habitat occurs throughout Nickajack and Guntersville reservoirs, as well as along the Sequatchie River.

Eastern small-footed bats roost in rock crevices, bridges, and other rocky habitats and usually hibernate in caves. This species has been reported from Nickajack Cave. Suitable roosting habitat exists for this species in several other caves. All of these caves are greater than 1.5 miles from the affected project areas and are in areas that would not be influenced by the construction activities.

The federally listed **Indiana bat** hibernates in caves and roosts under tree bark and occasionally in tree cavities during the rest of the year. Optimal summer roosting habitat usually consists of mature forest with an open subcanopy and near aquatic foraging habitat. Although Nickajack Cave is the typical locality for this species, Indiana bats have not been recorded from this cave during recent TVA surveys. Abundant suitable summer habitat for this species occurs in the area. The small forested, riparian areas on the project site do not contain high-quality habitat for this species.

Allegheny woodrats inhabit rocky outcrops, caves, and occasionally piles of boulders, brush, or other debris. This species has been reported from Nickajack Cave; all other suitable caves are greater than 1.5 miles from the project site. Brush piles or similar poor-quality habitat may exist adjacent to the Nickajack tailwaters and Sequatchie River.

The **Nickajack Cave beetle** and the **Nickajack Cave isopod** are restricted to cave habitats and have been recorded from Nickajack Cave. Suitable habitat for these species does not occur in the vicinity of the project site.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. The existing land uses do not currently support protected terrestrial animals or their habitats, and there would be no project-related changes to the existing environmental conditions. Therefore, adoption of the No Action Alternative would not impact protected terrestrial animals or their habitats.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Since there is no suitable habitat at the project site for Tennessee cave salamander, eastern small-footed bats, Nickajack Cave isopod, and/or the Nickajack Cave beetle, none of these state-listed species would be impacted under the Action Alternative. Furthermore, no designated critical habitats for federally listed terrestrial animal species are present in Marion County.

This alternative would remove small areas of forest habitat. These areas are not currently used as nesting sites by bald eagles. Due to the distance of the project site from any active bald eagle nests and the abundance of other suitable, potential nesting trees in the area, the proposed Action Alternative is not expected to impact bald eagles or their foraging habitat.

Although suitable Indiana bat habitat exists in the area, the proposed project would not remove Indiana bat habitat and would not result in impacts to this species. Some moderately suitable habitats exist for barking treefrogs (wetlands) and Allegheny woodrats (brush piles, rocky habitats) in the project area. The wetland areas on site would be avoided by construction activities. Due to the abundance of similar habitat for Allegheny woodrats in the area, construction would not significantly decrease the availability of these habitats in the area. Impacts to barking treefrogs or Allegheny woodrats resulting from the Action Alternative are not expected.

Gray bats occur in Nickajack Cave and occasionally use Little Cedar Mountain Cave. Foraging habitat exists over Nickajack and Gunter'sville reservoirs and the adjacent rivers and streams. The Action Alternative would not impact Nickajack or Little Cedar Mountain caves. Similarly, this alternative would not result in measurable impacts to gray bat foraging areas due to the abundance of available foraging habitat in the region and the tendency for gray bats to forage over large distances.

In conclusion, the Action Alternative would not result in direct, indirect, or cumulative impacts to any federally or state-listed terrestrial animals or their habitats.

3.4.3. Plants

Affected Environment

The TVA Natural Heritage database indicated no federally listed and eight state-listed plant species recorded within 5 miles of the project site. Six federally listed plant species are known from Marion County, Tennessee (Table 3-6). TVA conducted a field survey in October 2008, and no threatened or endangered species or their habitats were found in the project site.

American hart's tongue fern, a federally listed as threatened fern, is one of Tennessee's rarest plants. It does occur in Marion County, but only in limestone sinks along the slopes of the Cumberland Plateau. The habitat does not exist within the project site.

Eggert's sunflower, a member of the sunflower family, is no longer considered a federally listed species. This species favors rocky, open oak-hickory woodlands and barrens. Habitat could be present in borrow area and rail line. During a field visit on October 2, 2008, plants were not found within or adjacent to the project site.

Large-flowered skullcap, a federally listed as threatened species in the mint family, is common in the Tennessee River gorge. Habitat, rocky outcrops on wooded slopes, was not encountered on the project site.

Monkey-face orchid, a federal candidate species and member of the orchid family, grows on acid soils in boggy areas. Even though this species is known to occur in most southern states, due to habitat loss, these plants are not commonly encountered. Habitat for monkey-face orchid does not occur within or adjacent to the project area.

Table 3-6. Plants of Conservation Concern Reported From Within 5 Miles of the Project Site and Federally Listed Species Known From Marion County, Tennessee

Common Name	Scientific Name	Federal Status	State Status (Rank)
American smoke tree	<i>Cotinus obovatus</i>	--	SPCO (S2)
Chalk maple	<i>Acer saccharum</i> ssp. <i>leucoderme</i>	--	SPCO (S3)
Creeping St. John's wort	<i>Hypericum adpressum</i>	--	END (S1)
Eggert's sunflower	<i>Helianthus eggertii</i>	DM	THR (S3)
Featherfoil	<i>Hottonia inflata</i>	--	SPCO (S2)
Great Plains Ladies'-tresses	<i>Spiranthes magnicamporum</i>	--	SPCO (S1)
Hairy false gromwell	<i>Onosmodium molle</i> spp. <i>hispidissimum</i>	--	END (S1)
American hart's tongue fern	<i>Asplenium scolopendrum</i> var. <i>americanum</i>	LT	END (S1)
Huntsville vasevine	<i>Clematis morefieldii</i>	LE	END (S1)
Large-flowered skullcap	<i>Scutellaria montana</i>	LT	THR (S2)
Monkey-face orchid	<i>Platanthera integrilabia</i>	C	END (S2S3)
Nevius' stonecrop	<i>Sedum nevii</i>	--	END (S1)
Price's potato-bean	<i>Apios priceana</i>	LT	THR (S2)
Slender blazing star	<i>Liatris cylindracea</i>	--	THR (S2)
Spreading rockcress	<i>Arabis patens</i>		END (S1)

-- = Not applicable

Federal status codes: C = Candidate; DM = Delisted monitoring; LE = Listed endangered; LT = Listed threatened

State status codes: END = Endangered, THR = Threatened, SPCO = Special concern

State ranks: S1 = Critically imperiled with less than five occurrences; S2 = Imperiled with six to 20 occurrences; S3 = Rare or uncommon with 21 to 100 occurrences; S#S# = Occurrence numbers are uncertain

Huntsville Vasevine, a federally listed as endangered species that is restricted to rocky limestone bluffs and boulder fields. Smoke tree is an indicator species. In several locations throughout the Tennessee River Valley, Huntsville vasevine and Price's potato bean have been found growing together. Habitat for Huntsville vasevine does not occur within the project area.

Price's Potato Bean, a federally listed as threatened member of the legume family, that prefers disturbed areas such as forest openings, wood edges, and where bluffs descend to streams. This species is often associated with limestone. It also grows along highway rights-of-way and power line corridors. It does not flourish in forests with dense canopy such as the ones located on the project site.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. Since there are no federally or state-listed plant species known to occur within the project site, there would be no impacts to listed species.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Field reviews occurring in October 2008 did not reveal the presence of or the habitat to support federally or state-listed plant species occurring within or adjacent to the project site. Therefore, no impacts to federally or state-listed plant species are expected to occur under the Action Alternative. Furthermore, cumulative impacts to federally or state-listed plant species related to project activities are not anticipated.

In conclusion, the proposed action would affect listed aquatic species. However, with the mitigation outlined in Section 3.4.1, the Action Alternative would not jeopardize the continued existence of the pink mucket mussel and other federally listed aquatic species. The Action Alternative would not result in direct, indirect, or cumulative impacts to any federally or state-listed terrestrial animals or plants or their habitats.

3.5. Wetlands

Affected Environment

Wetlands are areas inundated by surface water or groundwater such that vegetation adapted to saturated soil conditions are prevalent. Examples include swamps, marshes, bogs, wet meadows, and shoreline fringes. General data regarding wetland type, rarity, and importance can be analyzed both by ecoregion and by watershed. The CBI project site is found within the Sequatchie Valley, which bisects the Southwestern Appalachian ecoregion (Griffith et al. 1998). The project site is also located within the Guntersville Reservoir watershed. Land use/land cover data generated by the USEPA in 1999 indicated wetlands comprise less than 0.3 percent of area in the Tennessee River watershed (TDEC 2006b). According to the same data, wetlands comprise 970 acres or approximately 0.4 percent of the total area of the Guntersville Reservoir watershed. In this region, wetlands are typically associated with low-lying floodplain areas and upland areas where poorly drained soils retain water during the growing season.

Wetland resources in the immediate project site were evaluated using National Wetlands Inventory data, land use/land cover data, and field survey data for the proposed construction, rail line, borrow area, TL relocation, and proposed loading ramp site.

Wetland determinations in the field were performed according to the USACE standards, which require documentation of hydrophytic (i.e., wet-site) vegetation, hydric soil, and wetland hydrology (Environmental Laboratory 1987; Reed 1997; U.S. Department of Defense and USEPA 2003). Broader definitions of wetlands, such as that used by the USFWS (Cowardin et al. 1979), the Tennessee definition (Tennessee Code 11-14-401), and the TVA Environmental Review Procedures definition (TVA 1983), were also considered in this review. Using a TVA-developed modification of the Ohio Rapid Assessment Method (Mack 2001) specific to the TVA region (TVARAM), wetlands were categorized by their functions, sensitivity to disturbance, rarity, and irreplaceability. The categorization was used to evaluate impacts and to determine the appropriate levels of mitigation for wetland impacts.

According to TVARAM, wetlands may be classified into three categories. Category 1 wetlands are considered “limited quality waters” and represent degraded aquatic resources that have limited potential for restoration and such low functionality that lower standards for avoidance, minimization, and mitigation can be applied. Category 2 includes wetlands of moderate quality and wetlands that are degraded but have reasonable potential for restoration. Avoidance and minimization are the first lines of mitigation for Category 2 wetlands. Category 3 generally includes wetlands of very high quality or of regional/statewide concern, such as wetlands that provide habitat for threatened or endangered species.

Three wetlands, comprising 1.23 acres, were identified within the proposed project site (Table 3-7). Wetland 001 (W001) and Wetland 002 (W002) are on CBI private property, and Wetland 003 (W003) is on TVA property. All of these wetlands scored in Category 2 using TVARAM, which indicates moderate condition and provision of wetland function.

Table 3-7. Wetlands in the Chicago Bridge and Iron Project Area

Wetland Identification	Type^a	Wetland Acreage	TVARAM Category (Score)
W001	PFO1A	0.08	2 (49)
W002	PFO1A	0.75	2 (64)
W003	PFO/PEM/PSS1A	0.40	2 (56)
Total acres		1.23	

^aClassification codes as defined in Cowardin et al. 1979: PEM1 = Palustrine emergent, persistent vegetation; PFO1 = Palustrine forested, broadleaf deciduous; PSS1 = Palustrine scrub-shrub, broadleaf deciduous; A = Temporarily flooded

W001 is an 0.08-acre forested wetland located in a depressional feature that is a former watering pond that has silted in over time. W001 exhibits hydric soils and is hydrologically connected to an unnamed tributary to Graham Branch. W001 is dominated by hydrophytic vegetation that includes American sycamore, privet, red maple, box elder, American elm, and willow oak.

W002 is a 0.75-acre forested wetland associated with a linear drainage feature at the southwest end of the site. W002 exhibits hydric soils and is dominated by hydrophytic vegetation that includes red maple, sycamore, box elder, water oak, and silver maple.

W003 is a 0.40-acre relatively steep riparian zone along the Tennessee River shoreline with American sycamore as the dominate canopy species. Common understory and shrubs include black willow, buttonbush, river birch, river cane, smartweed, tag alder, and tall false indigo. American water-willow, Canada goldenrod, deer tongue, fall panic grass, groundnut, horsetail, and redtop panic grass are common in the herbaceous layer. This wetland does not meet the USACE standards for jurisdictional wetlands due to a lack of hydric soils. It does however meet the standard for wetlands under Executive Order (EO) 11990 and TVA standards, which require a prevalence of wetland vegetation. This area is a relatively intact strip of shoreline habitat and provides both wildlife habitat and shoreline buffer functions.

Environmental Consequences

Activities in wetlands are regulated under Section 404 and Section 401 of the CWA and under EO 11990. Section 404 implementation requires that activities in wetlands be

authorized through a Nationwide General Permit or Individual Permit issued by the USACE; Section 401 requires water quality certification by the state (Strand 1997). EO 11990 requires agencies to minimize wetland destruction, loss, or degradation and to preserve and enhance natural and beneficial wetland values while carrying out agency responsibilities. TVARAM can be used as an aid in guiding wetland mitigation decisions consistent with TVA's independent responsibilities under NEPA and EO 11990.

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be no project-related changes to the existing environmental conditions, and no impacts are anticipated to wetland resources under the No Action Alternative.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. The proposed project would result in the clearing and fill of W003, approximately 0.40 acre of mixed wetland/shoreline habitat, for construction of the launching ramp/crane platform. Impacts to this wetland are unavoidable due to siting requirements of the fabrication plant and the water-dependent barge facilities.

Project plans indicate W001 and W002 would not be impacted; these areas would be left undisturbed by configuring the location of parking areas and roads to avoid these areas. The applicant would comply with USACE and TDEC regulations regarding any required permits. The loss of 0.40 acre of shoreline/wetland habitat would be regionally insignificant.

Cumulative impact analysis of wetland impacts takes into account wetland loss and conversion at a watershed-level scale, in this case within the Gunter'sville Reservoir watershed. According to the land use/land cover data, 970 mapped wetland acres are located within the localized watershed. The proposed fill of 0.40 acre of wetland/shoreline would affect less than 0.01 percent of overall wetland acreage in the watershed. Therefore, cumulative wetland impacts would be insignificant.

3.6. Terrestrial Ecology

3.6.1. Vegetation

Affected Environment

The project area is located within the Sequatchie Valley, a subdivision of the Southern Appalachians ecoregion, which stretches from Kentucky to Alabama. The Southern Appalachians ecoregion is characterized by open low mountains containing a mosaic of forest, woodlands, and some cropland and pastures (Griffith et al. 1998). The open valley floor is underlain by limestone, dolomites, and shale and provides a productive area for agriculture.

The vegetative (physiognomic) classes observed on the project site are dominated by herbaceous vegetation with deciduous forests occupying the edges of the project site, near Graham Branch and its tributaries, and along the Tennessee River channel. Small areas of mixed evergreen forest were found along fencerows and near the proposed rail line where it would connect to the main railroad line. No uncommon terrestrial plant communities, designated critical plant habitat, or otherwise noteworthy botanical areas occur on or adjacent to the project site.

Herbaceous vegetation located within the CBI private property, TVA property, and proposed TL relocation is mainly (90 percent) agricultural, in the form of actively producing hayfields. In addition, two areas within the fields are seasonally wet and contain some wetland vegetation (Section 3.5, Wetlands). The proposed rail line and borrow areas have similar vegetation to the areas above. However, approximately 33 percent of this land is in the form of former agricultural fields undergoing secondary succession.

Deciduous forests occupy approximately 8 percent of the project site. A small area of upland oak-hickory forests is located along CBI property's south boundary. A forested wetland is associated with a seasonally wet pond (Section 3.5, Wetlands). The vegetation located within the TVA property is a small riparian area, and the American sycamore is the dominant canopy species. There are two forested areas within the footprint of the proposed rail line, at the northeastern boundary of the CBI property and the connection point to the existing railway. The vegetation is similar to that mentioned above. Approximately 250 feet of evergreen forests would be cut for the proposed rail line. A complete summary of the herbaceous vegetation and deciduous forest species found within these areas is located in Appendix F.

Common invasive plant species occurring in the project area include Chinese privet, Japanese honeysuckle, Japanese stiltgrass, Johnson grass, mimosa, multiflora rose, and sericea lespedeza. These invasive species are Rank 1 (severe threat) and are of high priority to TVA (James 2002). Brazilian water-weed and Bradford pear were also found in the project area. The Brazilian water-weed is considered a Rank 3 species (a lesser threat that is not expected to alter native ecosystems) and Bradford pear is found on the Tennessee watch list. Essentially, the entire proposed project is on land in which the native vegetation has been extensively altered as a result of previous land use history.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. No project-related impacts to the vegetation of the area would occur.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. The site development would impact herbaceous vegetation (hayfields and successional fields). Additional impacts from the new rail construction are expected to the small pockets of deciduous forest and mixed evergreen forest. These plant communities are common and representative of the region; therefore, any impact to them is expected to be minor and regionally insignificant. With the implementation of proper BMPs and the use of weed-free rock for shoreline stabilization and along the proposed rail line, there would be no significant impacts to the vegetation and plant communities of the region from the spread of exotic invasive species. Cumulative impacts to the vegetation and plant communities of the region as related to project activities are not anticipated.

3.6.2. Wildlife

Affected Environment

Early successional habitat makes up the majority of the project site, consisting primarily of agricultural hayfields and fields of grasses and forbs. Some small sections also contain woody shrubs and tree seedlings. Birds common in early successional habitats include Carolina wren, eastern bluebird, brown thrasher, white-eyed vireo, eastern towhee,

northern cardinal, indigo bunting, common yellowthroat, field and song sparrows, mourning dove, and many other common songbirds. Mammals frequently observed in these habitats include Virginia opossum, eastern cottontail, striped skunk, white-tailed deer, coyote, and rodents such as white-footed mouse and hispid cotton rat. Common reptiles include black racer, rat snake, brown snake, and eastern garter snake. Wetlands within early successional habitats provide habitats for many amphibians such as American and Fowler's toads, green frog, northern cricket frog, spring peeper, upland chorus frog, and red-spotted newt. Other animals observed using these wetlands are Wilson's snipe, great blue heron, wood duck, beaver, muskrat, and raccoon.

The forested habitat in the proposed project site is deciduous forest and mixed evergreen forest. Deciduous forest provides habitat for numerous birds including blue jay, red-eyed vireo, white-breasted nuthatch, tufted titmouse, Carolina chickadee, eastern wood-pewee, downy woodpecker, pileated woodpecker, and eastern screech-owl. Northern slimy salamanders also occur on these forest floors. Common reptiles found in deciduous forests include eastern box turtle, worm snake, ring-necked snake, kingsnake, and copperhead. Mammals such as eastern chipmunk and eastern gray squirrel are also observed in this forest type. The evergreen forests provide habitat for many of the same species listed for upland deciduous forests. Additional bird species present in these forest types include barred owl, dark-eyed junco, pine warbler, and yellow-throated warbler.

The riparian zones in this project site are along the Tennessee River shoreline and along Graham Branch. They contain deciduous forest and early successional habitat. Bird species commonly present in these areas include tree swallow, cliff swallow, wood duck, double-crested cormorant, great blue heron, belted kingfisher, osprey, spotted sandpiper, killdeer, mallard, and numerous gull species. Other animals known from this habitat are midland water snake, false map turtle, eastern mud turtle, muskrat, and beaver.

A heron colony and three caves occur within 3 miles of the proposed project area. The heronry is on the eastern tip of Burns Island, 2 miles downstream from the proposed construction area. All three caves are more than 1.5 miles from the project site.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be project-related changes to the existing environmental conditions. No impacts would occur to wildlife habitats or wildlife populations as a result of the No Action Alternative.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site. The site development would impact mostly early successional habitat and some marginal strips of deciduous forest, mixed-evergreen forest, and riparian zones. However, these habitats and the wildlife inhabiting them are generally common throughout the region. There would be insignificant losses of any terrestrial habitats or wildlife in the project site as a result of the Action Alternative.

The implementation of the Action Alternative would not impact the heron colony at Burns Island because all construction areas are 2.0 mile away or greater. Disturbance occurring greater than 0.5 mile away would not impact this heronry. Three caves occur within 3 miles of the proposed project area, but all are greater than 1.5 miles away. Actions that take place greater than 200 feet from the entrance of a cave are unlikely to cause an impact within a cave. Therefore, no known caves would be impacted by the proposed actions. No

impacts to unique or important terrestrial animal habitats are expected from the project-related activities. This alternative would not result in significant direct, indirect, or cumulative adverse impacts to terrestrial animals or their habitats.

3.7. Natural Areas

Affected Environment

The project site is immediately adjacent to a mussel sanctuary and is within 3 miles of four additional natural areas: Nickajack Cave, Nickajack Oak Wetland, Little Cedar Mountain, and Sequatchie River.

Guntersville Reservoir State Mussel Sanctuary is immediately adjacent to the project site. The section of the Tennessee River from Nickajack Dam at TRM 424.7 downstream to the Tennessee-Alabama state line at TRM 416.7 has been designated a sanctuary by TWRA. The taking of aquatic mollusks by any means or the destruction of their habitat are both prohibited.

Nickajack Cave is approximately 1.5 miles southeast of the project area and has been designated by TVA as a Habitat Protection Area (HPA) and Small Wild Area (SWA). TWRA has also designated Nickajack Cave as a Wildlife Observation Area. Nickajack Cave supports a summer population of thousands of endangered gray bats. The HPA/SWA also includes a 254.5-acre wooded buffer surrounding the cave that is a popular destination for wildlife observation, especially the nightly emergence of bats from the cave during summer months. This area is managed jointly by TVA and TWRA.

Nickajack Oak Wetland is approximately 1.0 mile northeast of the project site and has been designated by TVA as an HPA. This 44-acre tract is an oak-forested headwater wetland and is shallowly inundated during parts of the year. This area is managed by TVA.

Little Cedar Mountain is approximately 2.6 miles northeast of the project site and has been designated by TVA as an HPA and SWA. This 320-acre ridge tract (elevation 900 feet) is managed by TVA for resource and scenic protection, hiking, and nature appreciation. Little Cedar Mountain Cave provides habitat for the gray bat. The regionally uncommon green salamander has been observed on limestone bluffs on the southern end of the mountain. A small glade on the mountain is habitat for several rare plants, including the cylindric blazing star, hairy false gromwell, and leafcup. A nature trail has been planned for this area and routed to avoid these sensitive habitats. The nature trail will include protective buffer zones and interpretive signage. Little Cedar Mountain also has cultural and historical significance as an early home to the Chickamauga Cherokee.

Sequatchie River, from the confluence with the Tennessee River to its headwaters, is listed on the Nationwide Rivers Inventory. The National Park Service (NPS) recognizes this stream for the following outstanding resource values: scenic, recreational, geologic, fish, and wildlife. The NPS characterizes the Sequatchie River as a “clean, pastoral float stream that flows through a beautiful narrow scenic valley.” The river at its confluence with the Tennessee River is approximately 1.1 miles north of the project site.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. No impacts to natural areas would occur from this action.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. The distance of the site from the natural areas described above is sufficient. Therefore, no direct or indirect impacts to these natural areas are anticipated as a result of the Action Alternative. No cumulative impacts to these natural areas, with the exception of the mussel sanctuary, are foreseeable under the time and scope bounds of this project.

The proposed action would directly impact mussels and their habitat within the Guntersville Reservoir State Mussel Sanctuary. The significance of these impacts and any potential mitigation is discussed in Section 3.4.1, Threatened and Endangered Species – Aquatic Species.

3.8. Visual Resources

Affected Environment

Visual resources are evaluated based on existing landscape character, distances of available views, sensitivity of viewing points, human perceptions of landscape beauty/sense of place (scenic attractiveness), and the degree of visual unity and wholeness of the natural landscape through the course of human alteration (scenic integrity).

The proposed project site lies along the left-descending bank of Guntersville Reservoir, 0.5 mile downstream of TVA's Nickajack Dam. The reservoir below the dam is less than 0.25 mile across and exhibits a riverine landscape character, with gentle to moderately sloping topography rising from the shoreline, which is generally well vegetated. Back-lying land uses in the vicinity are typically associated with agriculture, industry, or TVA project operations. Four large mooring cells are visible along the opposite shoreline approaching Nickajack Dam from the northwest. To the south, the Nickajack Port Authority barge terminal is visible in the immediate foreground. Views upstream are dominated by the dam and appurtenances, parking areas and river access, and transmission towers and lines that cross the reservoir near the dam. Views downstream of the otherwise undisturbed shoreline extend to the middleground viewing distance (0.5 mile up to 4 miles from the observer).

To the interior of the proposed project site, the landscape character is predominately agrarian. The topography is gently sloping. Views are limited to locations along Port Road, an improved two-lane roadway, and upper elevations to the south and west. A thin band of trees borders the property to the north and west. To the south, the forest becomes denser, nearing Tennessee State Route (SR) 156. Due largely to existing vegetation patterns and topography, views of the project site are generally restricted to the foreground viewing distance (up to 0.5 mile from the observer). To the north of the project site, a transmission line and associated structures are visible, crossing from east to west.

The existing scenic attractiveness is common to minimal, and the existing scenic integrity is moderate to low.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the requested approvals. The existing landscape character would not be affected.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Reservoir users downstream of Nickajack Dam would have foreground views of the proposed wharf area, shop, crane pad, and associated equipment. The proposed shoreline modifications would be visible in context with the existing landscape character established by the Nickajack Dam and the Nickajack Port. Shoreline development associated with this project would not contrast substantially with the developed shoreline that is presently visible from positions downstream of the dam.

Recreational reservoir users upstream of Nickajack Dam would potentially have views from the foreground and middleground viewing distances of taller elements associated with the proposed project, which could include the shop building, the mobile crane, and some of the site lighting. Generally, views would remain in context with the landscape character established by Nickajack Dam. To reduce potential impacts associated with building heights and lighting, commitments would be required if buildings and/or lighting extend above the elevation of Nickajack Dam, 652-foot msl.

Motorists and residents in the vicinity of the New Hope Community would notice increases in construction traffic throughout the early phases of the project. These visually discordant peaks in the traffic flow of equipment and personnel would stabilize upon completion and would not result in a long-term impact to existing scenic resources. Motorists traveling Port Road would have foreground views of the relocated 161-kV TL. Views of the relocated TL would generally not be available from positions outside the foreground due to existing trees and topography. The steel pole structures would be visually similar to the existing wooden pole structures that are presently visible to the northeast. Motorists traveling Port Road would also have foreground views of rail traffic to and from the facility. These views of rail cars and increases in rail traffic would remain in context with the established landscape character.

Collectively, the proposed project would result in the introduction of built structures into the natural environment, modification of the shoreline at TRM 423.8L, and an increase in traffic in the area. These actions, with adherence to the commitments listed below, would not result in a significant impact to the existing scenic resources. The commitments would be placed as additional conditions within TVA's Section 26a permit.

- Any site lighting that extends above elevation 652-foot msl would be fully shielded and equipped with full cutoff features that limit the amount of waste light produced at a vertical angle of 80 degrees above the lowest light-emitting portion of the luminaire.
- Any building that extends above elevation 652-foot msl would have exterior vertical and horizontal closure systems that are analogous in color to the architectural finishes of Nickajack Dam and its appurtenances.

3.9. Land Use/Prime Farmland

Affected Environment

The *TVA Act* authorizes TVA to acquire land and other property rights to carry out the purposes of the *TVA Act*. Property is sold or transferred in a manner authorized by the *TVA Act* or other federal laws if the property is identified as no longer being needed or if the sale or transfer would support one of TVA's missions.

TVA owns approximately 40,236 acres of property along Guntersville Reservoir. TVA's 2001 Plan allocated approximately 327 acres or 0.8 percent of TVA property for industrial/commercial development. The Plan states that 12 industrial land use agreements accounting for 123 acres existed prior to 2001. The requested term industrial easement area is located on a portion of TVA Tract XGR-172PT2. The Plan describes this tract as "proposed for possible future expansion of Nickajack Port Authority." However, Nickajack Port Authority has existing property available for development and does not anticipate expansion in the near future. The CBI proposal encompasses approximately 730 feet of shoreline and occupies less than 1 percent of all TVA-owned property along Guntersville Reservoir.

The Plan identified 44 tracts of TVA property containing approximately 2,500 acres of prime farmland. All of the 16,725-acre TVA Tract XGR-172PT2 is prime farmland. Prime farmland is defined by the U.S. Department of Agriculture (USDA) as land that has the best combination of chemical and physical characteristics for producing food, feed, forage, fiber, and oilseed crops. To be considered prime farmland, the land cannot be urban, built up, or covered by water. Concern regarding the conversion of prime farmland to urban or industrial use prompted the creation of the 1981 *Farmland Protection Policy Act*. This act requires that all federal agencies evaluate impacts to farmland prior to permanently converting the land to nonagricultural use via the completion of USDA-Natural Resource Conservation Service (NRCS) Form AD 1006, "Farmland Conversion Impact Rating."

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the easement and permits. TVA land would remain zoned for industrial/commercial development in the foreseeable future. In the meantime, the prime farmland soils in this parcel would remain undeveloped.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Both alternatives are consistent with the Plan allocation of industrial/commercial development for this portion of TVA Tract XGR-172PT2. Industrial development also is consistent with the adjacent land use to the southeast of the project site. However, under the Action Alternative, the majority of the farmland within TVA Tract XGR-172PT would be impacted either directly or indirectly by the proposed construction of the launching ramp and crane platform. As part of the Plan, Form AD 1006 was completed and submitted to the USDA-NRCS assessing all prime farmland, including this tract. That assessment rating was below the threshold rating level of 160, indicating that the development of this site would have an insignificant impact on prime farmland.

3.10. Floodplains

Affected Environment

The project would be located at TRM 423.8L on Guntersville Reservoir near New Hope, Tennessee. The 100-year floodplain on Guntersville Reservoir is the area that would be inundated by the 100-year flood. The 100-year flood elevation for the Tennessee River at TRM 423.8 is elevation 616.1-foot msl (NGVD 1929). The TVA Flood Risk Profile (FRP) elevation for the Tennessee River at TRM 423.8 is elevation 619.4-foot msl (National Geodetic Vertical Datum of 1929). At this location, the FRP elevation is equal to the 500-year flood elevation and is used to control flood damageable development for TVA projects

and on TVA lands. The town of New Hope has adopted the 100-year flood as the basis for its floodplain regulations, and any development must be consistent with those regulations.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the easement and permits. Therefore, no floodplains would be affected.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Portions of the launching ramp, crane platform, storm water outfalls, barge loading facility, and fill for industrial development would be located within the 100-year floodplain. Consistent with EO 11988, a launching ramp, crane platform, storm water outfalls, and barge loading facility are considered repetitive actions in the floodplain. However, the quantity of fill for these facilities would exceed the 1 acre-foot limitation in order to qualify as a repetitive action under the TVA Flood Control Storage Loss Guideline. The applicant has provided information documenting that this quantity of fill is necessary because of the size of the crane platform required for this project and the need to avoid dredging and blasting in the river to obtain the necessary water depth. Therefore, floodplain impacts associated with these facilities have been minimized.

Based on the preliminary Marion County, Tennessee, Flood Insurance Rate Map (FIRM) dated December 27, 2006, a substantial portion of the site is located in the Tennessee River 100-year floodplain. In order to develop this site, a large amount of fill would be placed within the 100-year floodplain for construction of the proposed fabrication plant and shop pad. Under EO 11988, fill for industrial development is not considered to be a repetitive action in the 100-year floodplain. The applicant purchased the site and made the decision to construct the proposed facilities at this location based on a previous FIRM that showed the site to be almost completely outside of the floodplain. The applicant later discovered that the floodplain covered a much larger area.

In order to complete the project at this location, there is no way to avoid development in the floodplain. In addition, relocating to another site would not be economically feasible. Therefore, there is no practicable alternative to this fill because the site has to be elevated above the TVA FRP elevation to fulfill TVA's flood control requirements, and there must be a uniform surface for the floor of the fabrication plant and the area needed to move the containment vessels. Adverse impacts would be minimized by using the least amount of fill possible and elevating all flood damageable items and equipment above the TVA FRP elevation. The total fill for the proposed project would displace about 14.9 acre-feet of flood control storage. As stated above, the quantity of fill has been minimized while achieving the project objective. Therefore, the project would comply with EO 11988 and the TVA Flood Control Storage Loss Guideline. The project would displace about 0.8 acre-foot of power storage.

To ensure that the proposed development would not adversely impact floodplains and flood control, TVA would include the following conditions in the final transfer agreement(s) and/or the Section 26a permit:

Standard Conditions

- You would contact your local government official(s) to ensure that this facility complies with all applicable local floodplain regulations.

- You are advised that TVA retains the right to flood this area and that TVA will not be liable for damages resulting from flooding.

Additional Conditions

- Any future development proposed within the limits of the 100-year floodplain, elevation 615.9-foot msl, is consistent with the requirements of EO 11988.
- Any equipment or future facilities subject to flood damage are located above the TVA FRP elevation, 619.4-foot msl.
- All future development is consistent with the requirements of TVA's Flood Control Storage Loss Guideline.

3.11. Recreation

Affected Environment

Nickajack Dam Reservation, developed and operated by TVA, is located at TRM 424.5. The area of the dam reservation that services Gunter'sville Reservoir has the following amenities: eight picnic tables, two handicap-accessible fishing berms, two toilet buildings, 110 day use parking spaces, and one boat ramp with a courtesy pier and 39 parking spaces.

South Pittsburg Municipal Park, operated by the City of South Pittsburg, is located at TRM 418.6R. The amenities include four picnic tables, two pavilions, and one paved boat ramp with 75 parking spaces.

There are three additional boat ramps in the vicinity of the project site:

- Bridgeport Ramp, operated by the City of Bridgeport and located at TRM 413.5R, is a paved ramp with nine parking spaces.
- Bridgeport Ferry Ramp, operated by the City of Bridgeport and located at TRM 421R, is a paved ramp with five parking spaces.
- Long Island Creek Ramp, operated by the Alabama Division of Wildlife and Freshwater Fisheries and located at TRM 410L, is a paved ramp with 10 parking spaces.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be no project-related impacts to recreation.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. The barge traffic from the proposed project would be minimal and should not have adverse effects on the existing boat ramps in the area. Boat traffic in the area is low, and instances of conflict are negligible. Any impacts to public recreation resources, facilities, and activities are anticipated to be insignificant.

As mentioned in Section 3.0, TVA is currently preparing an environmental review (forthcoming) for a commercial marina request (Rarity Club at Nickajack Lake) at TRM

426.9R on Nickajack Reservoir. The project includes the relocation of an existing boat ramp and fishing piers for Shellmound Campground as well as construction of 336 boat slips for Rarity Club. The boat ramp and associated wet slips will primarily service Nickajack Reservoir.

3.12. Navigation

Affected Environment

The project site is located at TRM 423.8L, on Guntersville Reservoir. The location is at the uppermost reaches of Guntersville Reservoir in the Nickajack Dam tailwater, 0.6 mile below Nickajack Dam.

Guntersville Reservoir was impounded in 1939 upon the completion of Guntersville Dam at TRM 349. Nickajack Dam was built at TRM 424.7 in 1967. Both of these reservoirs are links in the commercially navigable, 800-mile Tennessee River Waterway with the intent of bringing electricity and economic development to the Tennessee River Valley. The Tennessee River Waterway is an important part of the 12,000 mile-National Inland Waterway and supports national and international commerce.

According to the USACE's Lock Performance Monitoring System database, commercial barge traffic through Nickajack Lock ranged from 3.7 million tons in 2003 to 2.3 million tons in 2007 (715 to 484 tows, respectively) over the last five years. Recreational boat traffic through Nickajack Lock during the same time period ranged from 1,475 boats in 2007 to 1,856 in 2003. Lock utilization studies show that in 2007 Nickajack Lock was in use an average of 6.5 hours per day, seven days a week, with Fridays and Saturdays being the heaviest days for recreational boating traffic through the lock.

Nickajack Lock is located at the dam on the right-descending bank. The sailing line for the lock approach is also located close to the right bank so that tows can line up with the lock. Federal mooring cells, used by tows entering or exiting the lock, are near the sailing line, opposite and about 0.1 mile upstream of the project site. The Tennessee River is approximately 1,000 feet wide at the project site.

TVA operates a four-unit hydropower plant at Nickajack Lock and Dam. The spillways for the dam and discharge outlets for hydropower operations are located on the left-descending side of the dam.

The U.S. Coast Guard, the federal entity that is responsible for marking the commercial navigation channel, maintains the McDaniel Light and Daymark at TRM 423.6L. The McDaniel Light and Daymark identify the safe limit of the channel on the left-descending side. This is the only navigation aid in the vicinity of the proposed site aside from channel buoys.

Nickajack Port is immediately adjacent to and upstream of the project site on the left-descending bank. The port is largely unimproved terminal that handles such materials as outbound scrap metal and inbound pig iron on an occasional basis (USACE 2006). The port has mooring cells and a dock face that extend approximately 75 feet lakeward.

CBI proposes to construct a dock face extending 90 feet using fill, a 4 percent grade ramp through the downstream side of the dock face for barge loading, a crane platform on top of

the dock face, and a cable stabilization system attached to the front of the dock face. There would be a walkway across the front of the dock face to allow access to the cable system.

CBI plans to use roll-on, roll-off type barges to load and transport the container vessels. The largest of these is potentially 100 feet wide and 200 feet long. When loading, the barge would be perpendicular to the shoreline with a towboat. Total proposed lakeward extension when loading would not exceed 400 feet. CBI anticipates shipping up to four container vessels per month. Barges would not fleet at CBI between shipments.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be no project-related impacts to navigation.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. There are no foreseeable impacts to navigation as a result of the site development. The location of the launching ramp and crane platform is such that both construction activities and proposed location would be outside of the commercial channel and lock approach.

However, there are two potential impacts to navigation associated with the proposed facilities when loading operations take place. First, when loading operations occur at CBI, the barge and towboat would be perpendicular to the shoreline for no greater than 20 hours, and movement in and out of the Nickajack Port by tows would be obstructed. Upbound tows attempting to dock at the port facility would not be able to pull straight in from downstream. The tows would have to use the space between the port and the dam as a turning basin and make the approach to the port facility from upstream. Second, when loading operations occur at CBI, the view of the McDaniel Light and Daymark would be obstructed from downbound tows emerging from the lock. This is of only minor concern since the lock is on the right-descending side of the channel. Downbound tows exiting the lock would stay to the right of the channel. As the downbound tows proceed downstream and reach the loading tow at CBI, the tows would see the McDaniel Light.

In addition to the two potential impacts to navigation from loading operations at CBI, there may be some impacts to the loading operations from passing commercial and/or recreational boat traffic. Because of the loading tow's lakeward extension, the towboat and barge would be subject to wave wash and propeller wash from passing vessels. Likewise, the loading tow would be perpendicular to the flow of the river. Flows may reach velocities of 2 cubic feet per second when all four hydropower units at Nickajack Dam are generating or even higher velocities if spill operations are required to alleviate flooding upstream.

In conclusion, the loading operations of four container vessels per month at CBI would result in no significant impacts to navigation, if the following conditions are included within TVA's Section 26a approval. There would be insignificant cumulative impacts on navigation from the proposed action.

Additional Conditions

- The applicant is advised in writing that anticipated flows and generation schedules for Nickajack Dam and Hydropower facility may be found at <http://lakeinfo.tva.gov/>.

- The applicant is advised in writing that the facility fronts on a commercial navigation channel and may be subject to wave and/or propeller wash and possible collision damage.
- The applicant must advise, at least 10 working days in advance, the USACE Nashville District Navigation Branch of the schedule and nature of the shoreline construction activities for the preparation of a Notice to Navigation Interests to advise mariners of the activity (contact: Owen Traugher at Owen.Traugher@lrm02.usace.army.mil).
- The launching ramp and crane platform would be lighted in accordance with U.S. Coast Guard guidelines.
- When loading operations are underway, the towboat would remain with the barge and would not be left unattended.
- When loading operations are underway, the towboat and barge must be properly lighted at night.

3.13. Transportation

Affected Environment

The proposed development is located near New Hope, Tennessee, in Marion County and on Gunter'sville Reservoir. Primary access to the site is via Interstate 24 (I-24). From I-24 East, access to the area is via exit 161 to SR 156 and Port Road. From I-24 West, access to the area is via exit 152 to U.S. Highway (US) 27/72, SR 156, and Port Road. SR 156 and Port Road intersect in New Hope, Tennessee, about 7 miles west of I-24 (Figure 3-1).



Figure 3-1. Roads Located Near the Project Area

SR 156 is a rolling, Class II, rural, two-lane road with average lane widths and no paved shoulders and is in good condition. SR 156 runs from I-24 West to US 72. A Class II highway is one in which motorists do not necessarily expect to travel at high speeds. Class II facilities most often serve relatively short trips, the beginning and ending portions of

longer trips, or trips for which sightseeing plays a significant role. SR 156 has a posted speed limit of 45 miles per hour. The eastern portion of SR 156 has some steep stretches and sharp curves with limited sight distance. However, the western portion of SR 156 is relatively straight and flat. Port Road is a rolling, Class II, rural, two-lane road with small lane widths and no paved shoulders. The road surface is currently in average condition.

The latest available Annual Average Daily Traffic (AADT) counts show 1,726 vehicles per day on SR 156 near its intersection with Port Road (Tennessee Department of Transportation, 2007). Port Road did not have any current traffic data available, but from observation via a site visit on September 11, 2008, the current AADT would be minimal. A conservative traffic count was used to check the capacity of Port Road. The table below shows some various traffic counts in the area.

Table 3-3. Annual Average Daily Traffic Counts for Roads Near the Project Area

Road	Traffic Count
I-24	44,133
US 27/72	22,569
US 72	7,225
Tennessee SR 156 (Near Guntersville Reservoir)	3,934
Tennessee SR 156 (Near Project Site)	1,726
Tennessee SR 156 (Near I-24)	1,437

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. No project-related impacts to transportation would occur.

Under the Action Alternative, TVA and USACE would grant the necessary approvals, and there would be minimal impact on the road networks in the surrounding area. Based on current traffic data, SR 156 and Port Road have levels of service (LOS) of B and A, respectively.

The assessment of traffic impacts for this proposed action is based on the transportation planning and engineering concept of LOS found in the *Highway Capacity Manual* (Transportation Research Board 2000). The LOS concept addresses the quality of service, or operating conditions, provided by the roadway network, as perceived by motorists. LOS is a qualitative measure, expressed as one of six levels (A through F), that is described in terms of travel time, comfort, safety, and maneuvering freedom and incorporates various measurable factors associated with a particular segment of a roadway into the analysis. The six levels of service are defined as differing qualities of service provided by a roadway.

- LOS A is defined as the highest quality of service that a particular class of highway can provide. It is a condition of free flow in which there is little or no restriction on speed or maneuverability caused by the presence of other vehicles.
- LOS B is a zone of stable flow. The restriction on maneuverability is negligible, and there is little probability of major reduction in speed or flow.

- LOS C is a zone of stable flow, but at this volume and density level, most drivers are becoming restricted in their freedom to select speed, change lanes, or pass.
- LOS D approaches unstable flow. Tolerable average operating speeds are maintained, but could be subject to considerable and sudden variation. This condition is tolerable for short periods.
- LOS E is unstable with lower operating speeds and some momentary stoppages. There is little independence of speed selection and maneuverability. The upper limit of this level is the capacity of the facility.
- LOS F indicates forced-flow operations at low speeds. The level of density increases to the effect of a traffic "jam."

After the addition of the proposed development and future traffic projections, the TVA projected 2008 AADT for SR 156 is 2,547 and approximately 800 for Port Road. Even with these increases, the LOS for SR 156 and Port Road remain unchanged. The majority of the fabrication materials would be transported to the plant via rail. During and after construction, the majority of vehicular traffic would come from the construction workers or employees commuting to/from the plant. The new traffic generated from the development would not impact any of the residential or business owners. Although this new traffic could be during the peak hours, the majority of it would be traveling in the opposite direction of the existing traffic. The existing traffic would be heading away from the proposed development to the drivers' prospective workplaces. Recent Tennessee Department of Transportation AADT traffic counts for SR 156 in this area have declined from 2,176 in 2004 to 1,726 in 2007. The proposed development would generate and distribute additional traffic to the existing transportation network. There would be an approximate daily increase of 280 commuters. However, the majority of the fabrication materials would be delivered via rail. This increase would not create any significant changes or overloading to the network. The current traffic volumes in the area appear to be at levels well below what the facilities can accommodate.

The intersection at SR 156 and Port Road is a sufficient 90-degree angle intersection with good turning radii at the opening to handle the generated truck traffic. Trucks hauling in materials would not have difficulty making the turns into and out of Port Road. Due to slow acceleration of trucks, warning signs would be placed on SR 156 to notify the oncoming traffic of trucks entering the road. These signs would follow the standards found in the latest edition of the *Manual on Uniform Traffic Control Devices* published by the Federal Highway Administration.

A possible impact would be pavement damage on Port Road. Many factors such as weather, subgrade, design, etc., affect the life of a pavement. The number of loaded truck passes is also one of these factors. Port Road would be receiving truck traffic from construction hauling, as well as trucks hauling in materials to the plant after construction. Even without knowing the structural capacity of the road, with an increase in loaded truck traffic there would be increased pavement maintenance required. Trucks would not be loaded beyond the legal load limits and must meet all safety standards, and hauling would comply with all federal, state, and local ordinances.

The addition of rail traffic would not have any impact on the current LOS of the rural roads. There would be 10 to 15 rail cars per month hauling in materials for the plant. Only one at-

grade crossing will need to be added on Port Road. Traffic would be very light on Port Road, and there is no residential traffic to impact. If the following condition is included within TVA's Section 26a approval, there would be insignificant impacts to transportation.

Additional Condition

- Warning signs would be placed on SR 156 to notify the oncoming traffic of trucks entering the road. These signs would follow the standards found in the latest edition of the *Manual on Uniform Traffic Control Devices* published by the Federal Highway Administration.

3.14. Socioeconomics

Affected Environment

As previously mentioned, the proposed fabrication plant would be located in Marion County, Tennessee. The site is on the south side of the Tennessee River, east of South Pittsburg and south of Kimball. The population of Marion County is estimated by the U.S. Census Bureau to be 18,138 as of 2007. Per capita personal income in Marion County in 2006 was \$27,069, about 74 percent of the national average, according to estimates by the U.S. Bureau of Economic Analysis. The county and national personal income averages are somewhat lower than the state average of \$32,172.

Employment in Marion County, as of 2006, is more concentrated in farm, manufacturing, and retail trade activities than in the state or the nation. About 3.3 percent of jobs in Marion County are in farming activities, compared to 2.6 percent statewide and 1.6 percent nationally. Manufacturing accounts for 14.4 percent of jobs in the county, compared to 11.1 percent statewide and 8.3 percent nationally. About 14.9 percent of jobs are in retail trade, compared to 11.3 percent statewide and 10.8 percent nationally. Government employment is 12.5 percent of the county total, higher than the state average of 11.8 percent. The national average of government employment is 13.5 percent.

According to the 2000 Census of Population, more than half (52.4 percent) of the employed workers living in Marion County, commute to jobs outside the county. The largest group, over 36 percent, worked in adjacent Hamilton County (Chattanooga). The second-largest group, about 5 percent, commuted south to adjacent Jackson County (Scottsboro), Alabama. Most of the other commuters worked in various nearby Tennessee, Georgia, and Alabama counties.

According to estimates for 2007 by the U.S. Census Bureau, the minority population of Marion County is small and constitutes 6.5 percent of total population. This is much lower than the state average of 22.8 percent and the national average of 34.0 percent. The poverty level in Marion County, 16.6 percent, is slightly higher than the state average, 15.6 percent, and the national average, 13.3 percent, according to U.S. Census Bureau estimates for 2005.

Environmental Consequences

Under the No Action Alternative, TVA and USACE would not grant the necessary approvals. There would be no changes to the socioeconomics of the area.

Under the Action Alternative, TVA and USACE would grant the necessary approvals for CBI to develop the site as proposed. Construction of the facility and related infrastructure would

create jobs in Marion County, providing temporary employment for some residents of the county and the surrounding area. Some workers would temporarily relocate to Marion County. This employment would result in a small, temporary positive impact on income in Marion County. A secondary, temporary positive income impact would occur as workers and their families spend some part of their earnings in Marion County. However, this secondary impact on employment and income in the area is not likely to be noticeable overall, due to the relatively short duration of construction.

Once operations begin, the facility is expected to employ about 280 workers. This would be an increase of about 2.6 percent in the number of jobs in the county. As a result of the increase in income, there would be a small increase in income in the county and increases in local purchases of goods and services and in local government revenues. There would also be minor impacts on government and social services, but these likely would not be noticeable overall.

Marion County is expected to continue to have slow but steady population growth. Between 2001 and 2006, the number of jobs in the county increased by an average of almost 150 per year. The proposed project would create almost twice this number at 280. Therefore, the increase in the number of jobs would be a noticeable impact as it occurs. Some workers would move into Marion County. However, other workers would already be residents of the county or would commute from surrounding counties. In the context of longer-term growth, the proposed project would not likely produce a noticeably large impact on population, housing, or the local economy.

3.15. Summary of TVA Permit Conditions and Mitigation Measures

Under the Action Alternative, TVA would require CBI to comply with all applicable federal, state, and local regulations, as well as Section 26a permit conditions. In addition to adherence to TVA's Section 26a General Conditions, including construction-related BMPs, the following permit conditions and mitigation measures would be required. These measures and conditions would reduce the potential for adverse environmental effects. Additional measures and conditions would be established when consultations with the SHPO and USFWS are completed.

The following measures would be included as Standard Conditions in the Section 26a approval:

- You agree to use erosion control measures around any material stockpile areas.
- You agree to avoid contact of wet concrete with the stream or reservoir and avoid disposing of concrete washings or other substances or materials in those waters.
- You would contact your local government official(s) to ensure that this facility complies with all applicable local floodplain regulations.
- You are advised that TVA retains the right to flood this area and that TVA will not be liable for damages resulting from flooding.

The following measures would be included as Additional Conditions in the Section 26a approval:

- Prior to construction, CBI would develop and submit for TVA's approval a vegetation management plan (VMP) for Graham Branch and its tributaries. The VMP would include standard shoreline management zones (SMZs) as defined in Muncy (1999).
- Any individuals of federally listed mussels encountered during preconstruction survey as outlined in the draft Unionid Mussel Translocation Plan would be relocated (Appendix E).
- Site-specific best management practices (BMPs) needed to protect listed species would be implemented (Appendix B).
- Success of transplant activities as outlined in the draft Unionid Mussel Translocation Plan would be monitored by CBI (Appendix E).
- Any site lighting that extends above elevation 652-foot msl would be fully shielded and equipped with full cutoff features that limit the amount of waste light produced at a vertical angle of 80 degrees above the lowest light-emitting portion of the luminaire.
- Any building that extends above elevation 652-foot msl would have exterior vertical and horizontal closure systems that are analogous in color to the architectural finishes of Nickajack Dam and its appurtenances.
- The applicant is advised in writing that anticipated flows and generation schedules for Nickajack Dam and Hydropower facility may be found at <http://lakeinfo.tva.gov/>.
- The applicant is advised in writing that the facility fronts on a commercial navigation channel and may be subject to wave and/or propeller wash and possible collision damage.
- The applicant must advise, at least 10 working days in advance, the USACE Nashville District Navigation Branch of the schedule and nature of the shoreline construction activities for the preparation of a Notice to Navigation Interests to advise mariners of the activity (contact: Owen Traughber at Owen.Traughber@ltn02.usace.army.mil).
- The launching ramp and crane platform would be lighted in accordance with U.S. Coast Guard guidelines.
- When loading operations are underway, the towboat would remain with the barge and would not be left unattended.
- When loading operations are underway, the towboat and barge must be properly lighted at night.
- Any future development proposed within the limits of the 100-year floodplain, elevation 615.9-foot msl, is consistent with the requirements of Executive Order 11988.
- Any equipment or future facilities subject to flood damage are located above the TVA Flood Risk Profile elevation, 619.4-foot msl.

- All future development is consistent with the requirements of TVA's Flood Control Storage Loss Guideline.
- Warning signs would be placed on State Route 156 to notify the oncoming traffic of trucks entering the road. These signs would follow the standards found in the latest edition of the *Manual on Uniform Traffic Control Devices* published by the Federal Highway Administration.

CHAPTER 4

4.0 LIST OF PREPARERS

4.1. NEPA Project Management

Heather L. McGee

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 Experience: 7 years in Planning and Managing Land and Environmental Impact Assessment
 Involvement: NEPA Compliance, Document Preparation, and Land Use

4.2. Other Contributors

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Involvement: Cultural Resources

Ella Christina Guinn

Position: Project Control Specialist
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Experience: 14 years in Land Use Analysis; 6 years in Environmental Services
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 Experience: 6 years Recreation Research and Administration
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Roger A. Milstead

Position: Program Manager, Flood Risk
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Jason M. Mitchell

Position: Natural Areas Biologist
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 Experience: 15 years in Natural Resource Planning and Ecological Assessment with Emphasis on Sensitive Resources
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Kim Pilarski-Brand

Position: Senior Wetlands Biologist
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 Involvement: Wetlands

Erin E. Pritchard

Position: Archaeologist
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 Experience: 9 years in Site Planning, Design, and Visual Resource Management
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CHAPTER 5

5.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES ARE SENT

Federal Agencies

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U.S. Congressman Zach Wamp, Chattanooga, Tennessee
U.S. Senator Lamar Alexander, Chattanooga, Tennessee
U.S. Senator Bob Corker, Chattanooga, Tennessee

State of Tennessee Senator Andy Berke, Chattanooga, Tennessee
State of Tennessee Representative Richard Floyd, Chattanooga, Tennessee
State of Tennessee Representative Bill Harmon, Dunlap, Tennessee

Howell Moss, Mayor, Marion County, Tennessee
Claude Ramsey, Mayor, Hamilton County, Tennessee

David Jackson, Mayor, City of Kimball, Kimball, Tennessee
Mike Killian, Mayor, City of South Pittsburg, South Pittsburg, Tennessee
Mark Myers, Mayor, Town of New Hope, New Hope, Tennessee
Billy Simpson, Mayor, City of Jasper, Jasper, Tennessee

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CHAPTER 6

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